CA-IR-130

Ref: T-4, Page 16, Line 18 and HECO Workpaper 406, Page 303

a. Please describe the method used to calculate the equivalent forced outage rates for each year, for each unit.

b. Provide a description of the cause of the forced outage, and the remedial measures taken for each unit equivalent forced outage rate exceeding 5% in any year.

HECO Response:

a. The method used to calculate the equivalent forced outage rates for each year, for each unit is as follows:

$$\frac{\text{Forced Outage MWh + Equiv. Forced Derated MWh}}{\text{Forced Outage MWh + Service Hours MWh + Equiv. Forced Derated MWh During a Reserve Shutdown}} \times 100$$

Where:

- A forced outage (or derate) is an outage (or derate) that requires that the unit be removed from service (or reduced in capacity) before the end of the next weekend.
- Service Hours MWh is the product of the hours that the unit was in service multiplied by the capability of the unit.
- Reserve Shutdown is when a unit is available for load but is not synchronized to the system due to a low level of demand that didn't require that unit's capacity.

This process is done for each generating unit and is consolidated to the HECO level.

b. A description of the cause of the forced outage, and the remedial measures taken for each unit equivalent forced outage rate exceeding 5% in any year, is as follows:

Unit	EFOR	Year	Cause	Remedy
H8	7.52%	2001	81 BFP motor and volute	Replaced motor and volute
H9	6.42%	2003	Area meter linkage	Required servicing and calibration
W4	6.16%	2002	Cable tray fire	Replaced frayed cables
W9	35.86%	2000 2002 2002	Fuel pump Radiator fan lube oil precipitator	Service pump Replaced fan Service precipitator
W10	20.81%	1999 2003	Operator error turbine vibration	Additional training turbine balancing

CA-IR-131

Ref: T-4, Page 17, Line 7.

Please provide a copy of the January 12, 2004 planned Maintenance Schedule.

HECO Response:

Please see the response to CA-IR-43.a, where HECO has provided a copy of the 2005 Planned Maintenance Schedule dated January 12, 2004. As stated in the response to CA-IR-43.b, the schedule was revised as of 2/3/05, and is being further revised.

CA-IR-132

Ref: T-4, Page 24, Line 19.

Please provide a detailed calculation and complete copies of all supporting documentation for the estimated $783,000 for Kahe pipeline charges in the test year.

HECO Response:

The computation of the $783,000 figure was based upon a 3-year average of the historical level (2001, 2002 and 2003) of expenditures incurred under the terms and conditions of the Facilities and Operating Contract then in effect between HECO and Chevron, approved by the Commission in Decision and Order No. 16141, issued December 30, 1997, Docket 97-0397. As discussed later in this response, the $783,000 has been adjusted downward to approximately $617,000 based upon the allocation of the "Base Fee" incurred under the terms of the successor agreement to the Facilities and Operating Contract, both executed in December 2004. Under the provisions of the Facilities and Operating Contract under which pipeline charges were incurred in the three referenced years, historical expenses included (see also the discussion of the various types of fuel facilities charges the responses to CA-IR-133, CA-IR-134 and CA-IR-135):

1 the Pipeline facilities fees (a contractually stipulated amount subject to quarterly

4. a charge monthly to reimburse Chevron for direct costs of direct labor, materials and contract services, plus a stipulated markup to compensate Chevron for cost of work administration, documentation and billing.

The use of a 3-year average period is consistent with the "normalization" method utilized in the last HECO rate case filing for this type of large-expenditure activities, including the performance of internal pipeline inspection and pipeline section replacement, the planning and execution of which occur in intervals in excess of one year.

In the development of the historical costs submitted in conjunction with HECO's rate case application filed on November 12, 2004, it was found subsequently that certain minor mathematical errors were made and one source of Kahe pipeline throughput expense, throughput on LSFO purchased from Chevron and delivered directly to HECO's Kahe Plant, was unintentionally omitted. The effect of this omission and the main unintentional error was to understate the computed annual average Kahe pipeline charges by $59,484. Detail in the form of monthly totals for the omitted throughput charges is shown on pages 13 through 16 of this response.

Provided in a later part of this response are worksheets containing:

1. actual historical cost by month for throughput charges incurred by HECO on Low Sulfur Fuel Oil ("LSFO") transferred to HECO's Kahe Plant from HECO's Barbers Point Tank Farm ("BPTF") central storage facility for year 2001, 2002, 2003 and year-to-date 2004, shown on pages 9 through 12, respectively;
2. actual historical cost by month for throughput charges incurred by HECO on LSFO purchased from Chevron and delivered directly to Kahe for 2001, 2002, 2003 and year-to-date 2004, shown on pages 13 through 16, respectively;

3. actual historical costs by month for Facilities Fees, maintenance of pumping and heating station reimbursable/variable expenses billed to HECO for the operations and maintenance of the Kahe pipeline by Chevron under the terms and conditions of the Facilities and Operating Contract for 2001, 2002, 2003 and year-to-date 2004, shown on pages 17 through 20, respectively; and
4. the normalization (1/3) of annual aggregate pipeline charges and the conversion of these normalized of conversion of these numerous types of historical costs into 2005 dollars, is shown on page 21.

As noted in part 5 above, subsequent to the submission of the test year data in HECO's rate case application on November 12, 2004, on December 14, 2004, HECO and Chevron executed successor agreements to the Facilities and Operating Contract. These new agreements reflect changed circumstances: the entry into service of the recently constructed HECO Waiau pipeline, the transport of LSFO from BPTF to HECO's Iwilei storage facility by truck – thus obviating HECO's need to utilize the Chevron Black Oil pipeline for the distribution of HECO fuel to those destinations. Charges for the usage, throughput and maintenance of the Barbers Point/Waiau and Waiau/Iwilei segments of the Chevron Black Oil pipeline and the maintenance of the related heating and pumping stations were thereby modified or eliminated, respectively. The Operations and Maintenance Agreement, under which pipeline and BPTF operations and maintenance tasks are performed and under which related charges are incurred, reflects the integration of the Waiau and HECO Kahe pipelines [redacted]

HECO's Iwilei fuel storage is loaded at a loading facility recently installed inside the BPTF facility. The Barbers Point Tank Farm Services Agreement provides for low-pressure steam, fire water, incipient fire response and certain other services which had previously been provided under the terms and conditions of the Facilities and Operating Contract. The services provided and related charges levied under the provisions of this new services contract as well as historical

Charges to be incurred under the provisions of the Operations and Maintenance agreement executed between Chevron and HECO pertaining to the Kahe pipeline expense as revised for HECO's test year fuel related expense include:

1. a "Facilities Base Fee" of $163,288 per month, of which $114,302 is subject to quarterly escalation commencing April 1, 2005, apportioned between the Kahe and Waiau pipelines on the basis of their respective lengths, 5.144 miles and 12.804 miles, respectively, and prorata share (allocated on the basis of dollar of expense) of Fuel Handling Expenses, the aggregate amount of which, $329,225.33, is shown on the spreadsheet on page 22 of this response and remains unchanged from that embedded in the individual components of the version of the Test Year Fuel Related Expenses in HECO-WP-410, submitted in the test year application filing, a revised version of which is shown on page 23 of this response; and
2. The estimates for "Facilities Non-Base Maintenance" is based upon the average of the actual costs incurred in 2001, 2002 and 2003 (shown on pages 17 through 19 of this response) for "reimbursable/variable maintenance, i.e. non-routine maintenance, which includes the costs of direct labor, materials and contract services incurred by Chevron, which is reimbursed including contractually stipulated [illegible]

dollar of expense) of Fuel Handling Expenses, the aggregate amount of which, $329,225.33, is shown on the spreadsheet on page 22 of this response and remains unchanged from that embedded in the individual components of the version of the Test Year Fuel Related Expenses in HECO-WP-410, submitted in the test year application filing, a revised version of which is shown on page 23 of this response.

Also shown on the spreadsheet on page 22 and revised HECO-WP-410 on page 23 are the corresponding revised annual expense amounts for the operations and maintenance of the new HECO Waiau pipeline also derived from charges incurred under the Operating and Maintenance Agreement. An engineering estimate of 'routine" maintenance costs to be expected in the Waiau pipeline's first calendar year of service of $62,114 per year was used in lieu of utilizing an average of the historical maintenance expenses incurred for the BP/Waiau segment of the Chevron Black Oil pipeline, a portion of a longer, older and less sophisticated pipeline (which would have been approximately $593,000). However, the estimated expense for 2005 maintenance of heating and pumping stations of about $343,000, levied under the Facilities and Operating Contract, was included in previously submitted version of the test year fuel related expense figure of about $437,000 (comprised of the maintenance estimates of $62,114, and $343,000, and about $32,000 for the prorata share of the Fuel Handling Expense). Estimated expenses for the operation and maintenance of the new Waiau pipeline shown on page 22 of this response also includes a corresponding prorata share (allocated on the basis of dollar of expense)

submitted in the test year application filing, a revised version of which is shown on page 23 of this response.

Steam and certain other services required for the operation of BPTF which had previously been provided under the terms and conditions of a separate section of the Facilities and Operating Contract, are to be provided by Chevron under the provisions of a separate agreement, the "Barbers Point Tank Farm Services Agreement." Expenses to be incurred under this services agreement and which have been incorporated as revised figures in the spreadsheet on page 22 as "BPTF Services," include:

1. a "Base Fee" of $24,375 per month, $1,219 of which is subject to quarterly escalation;

2. a monthly charge for the supply of low pressure steam for heating, the cost of which is

currently on an 11 year cycle (last in 1995 - 1997, $139,012, see response to CA-IR-136 for annual historical amounts incurred and normalization; and

5. a corresponding prorata share (allocated on the basis of dollar of expense) of Fuel Handling Expenses, the aggregate amount of which, $329,225, is shown on the spreadsheet on page 22 of this response and remains unchanged from that embedded in the individual components of the version of the Test Year Fuel Related Expenses in HECO-WP-410, submitted in the test year application filing, a revised version of which is shown on page 23 of this response.

The spreadsheet on page 22 and revised HECO-WP-410 on page 23 also include revised BPTF test year expenses that incorporate changes in fees resulting from the provisions of this second new agreement.

The combined effect of the two new fuel facilities operation, maintenance and services agreements, and their new respective fee structures, is to reduce the test year expense of the charge corresponding to "Kahe Pipeline Facilities" from $783,000 to $617,000, and to reduce the total "Test Year Fuel Related Expenses" from $4,554,000 to a revised $3,882,000.

THROUGHPUT ON TRANSFERS
BPTF - KAHE - 2001

	LSFO VOLUME	LSFO THRUPUT
** TOTAL JANUARY 2001 **	332,252.88	$25,264.87
** TOTAL FEBRUARY 2001 **	345,808.42	$26,295.66
** TOTAL MARCH 2001 **	384,839.48	$29,263.66
** TOTAL APRIL 2001 **	387,539.10	$30,680.02
** TOTAL MAY 2001 **	401,228.66	$31,763.73
** TOTAL JUNE 2001 **	340,730.89	$26,974.38
** TOTAL JULY 2001 **	376,041.59	$31,728.33
** TOTAL AUGUST 2001 **	319,821.73	$26,984.78
** TOTAL SEPTEMBER 2001 **	340,648.25	$28,742.01

THROUGHPUT ON TRANSFERS
BPTF - KAHE - 2002

	LSFO VOLUME	LSFO THRUPUT
** TOTAL JANUARY 2002 **	370,494.14	$26,243.17
** TOTAL FEBRUARY 2002 **	274,291.64	$19,428.88

THROUGHPUT ON TRANSFERS
BPTF - KAHE - 2003

	LSFO VOLUME	LSFO THRUPUT
** TOTAL JANUARY 2003 **	400,925.32	$26,727.37
** TOTAL FEBRUARY 2003 **	352,691.26	$23,511.25
** TOTAL MARCH 2003 **	405,873.49	$27,056.50
** TOTAL APRIL 2003 **	422,988.08	$29,519.15
** TOTAL MAY 2003 **	420,758.79	$29,363.58
** TOTAL JUNE 2003 **	323,529.44	$22,578.20
** TOTAL JULY 2003 **	395,901.94	$32,577.34

THROUGHPUT ON TRANSFERS
BPTF - KAHE - 2004

	LSFO VOLUME	LSFO THRUPUT
** TOTAL JANUARY 2004 **	358,342.25	$28,740.19
** TOTAL FEBRUARY 2004 **	296,738.76	$23,799.39
** TOTAL MARCH 2004 **	416,424.48	$33,398.58
** TOTAL APRIL 2004 **	370,806.38	$28,581.17
** TOTAL MAY 2004 **	294,440.19	$22,694.97
** TOTAL JUNE 2004 **	300,537.96	$23,164.99
** TOTAL JULY 2004 **	346,961.36	$28,550.20
** TOTAL AUGUST 2004 **	409,002.71	$33,655.36
** TOTAL SEPTEMBER 2004 **	477,533.62	$39,294.53
** TOTAL OCTOBER 2004 **	468,028.08	$38,656.15
** TOTAL NOVEMBER 2004 **	437,300.85	$38,262.24
** TOTAL DECEMBER 2004 **	387,180.39	$33,876.12
	Barrels	Thruput $
annual total	4,563,297.03	$372,673.89

THROUGHPUT ON CHEVRON FUEL PURCHASES - KAHE - 2001

	LSFO VOLUME	LSFO THRUPUT
TOTAL JANUARY 2001	110,013.46	$7,440.33
TOTAL FEBRUARY 2001	77,851.14	$6,273.79
TOTAL MARCH 2001	78,251.86	$5,712.38
TOTAL APRIL 2001	59,314.25	$4,507.88
TOTAL MAY 2001	34,511.66	$2,622.89
TOTAL JUNE 2001	126,341.74	$9,601.98
TOTAL JULY 2001	76,075.70	$6,162.13
TOTAL AUGUST 2001	103,815.41	$8,409.05
TOTAL SEPTEMBER 2001	89,431.07	$7,243.92
TOTAL OCTOBER 2001	90,415.87	$6,871.61
TOTAL NOVEMBER 2001	103,885.25	$7,895.30
TOTAL DECEMBER 2001	60,349.03	$4,586.52

	Barrels	Thruput $
annual total	1,010,256.44	$77,327.78
imputed HI Use Tax		$386.64
imputed HGET		$3,221.48
imputed total throughput		**$80,935.90**

THROUGHPUT ON CHEVRON FUEL PURCHASES - KAHE - 2002

	LSFO VOLUME	LSFO THRUPUT
TOTAL JANUARY 2002	94,515.68	$6,427.06
TOTAL FEBRUARY 2002	61,334.46	$4,170.74
TOTAL MARCH 2002	46,036.80	$3,130.50
TOTAL APRIL 2002	33,246.14	$1,961.52
TOTAL MAY 2002	50,451.50	$2,976.64
TOTAL JUNE 2002	15,634.23	$922.42
TOTAL JULY 2002	95,561.37	$5,447.00
TOTAL AUGUST 2002	106,380.76	$6,063.71
TOTAL SEPTEMBER 2002	70,907.67	$4,041.74
TOTAL OCTOBER 2002	65,458.88	$4,123.91
TOTAL NOVEMBER 2002	52,451.14	$3,304.42
TOTAL DECEMBER 2002	81,603.09	$5,140.99

	Barrels	Thruput $
annual total	773,581.72	$47,710.65
imputed HI Use Tax		$238.55
imputed HGET		$1,987.63
imputed total throughput		**$49,936.83**

THROUGHPUT ON CHEVRON FUEL PURCHASES - KAHE - 2003

	LSFO VOLUME	LSFO THRUPUT
TOTAL JANUARY 2003	17,598.60	$1,126.31
TOTAL FEBRUARY 2003	45,375.68	$2,904.04
TOTAL MARCH 2003	32,758.86	$2,096.57
TOTAL APRIL 2003	57,515.07	$3,853.51
TOTAL MAY 2003	11,839.52	$793.25
TOTAL JUNE 2003	37,011.90	$2,479.80
TOTAL JULY 2003	56,692.24	$4,478.68
TOTAL AUGUST 2003	55,595.56	$4,392.05
TOTAL SEPTEMER 2003	158,387.54	$12,512.61
TOTAL OCTOBER 2003	26,062.78	$1,954.71
TOTAL NOVEMBER 2003	68,287.41	$5,121.56
TOTAL DECEMBER 2003	49,952.28	$3,746.43

	Barrels	Thruput $
annual total	617,077.44	$45,459.52
imputed HI Use Tax		$227.30
imputed HGET		$1,893.84
imputed total throughput		$47,580.66

THROUGHPUT ON CHEVRON FUEL PURCHASES - KAHE - 2004

	LSFO VOLUME	LSFO THRUPUT
TOTAL JANUARY 2004	53,920.32	$4,151.87
TOTAL FEBRUARY 2004	15,874.27	$1,222.32
TOTAL MARCH 2004	93,696.63	$7,214.64
TOTAL APRIL 2004	45,285.88	$3,351.15
TOTAL MAY 2004	105,793.56	$7,828.72
TOTAL JUNE 2004	150,295.96	$11,121.90
TOTAL JULY 2004	48,073.29	$3,797.79
TOTAL AUGUST 2004	120,943.20	$9,554.51
TOTAL SEPTEMBER 2004	87,173.26	$6,886.69
TOTAL OCTOBER 2004	76,822.94	$6,453.13
TOTAL NOVEMBER 2004	94,417.62	$7,931.08
TOTAL DECEMBER 2004	126,285.18	$10,607.95

	Barrels	Thruput $
annual total	1,018,582.11	$80,121.75
imputed HI Use Tax		$400.61
imputed HGET		$3,337.87
imputed total throughput		$83,860.23

2001 MAINTENANCE & FACILITY CHARGES - Actual

ACCOUNT /PROJECT/WORK ORDER #			JAN.	FEB,	MAR.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Kahe Pipeline Facilities Fees	HP001037	PIF 230 KTF NE NPIZZZZZ 501	$27,705	$27,705	$27,705
Kahe P/L pumping & heating station O&	HP001038	PIF 230 KTF NE NPIZZZZZ 501	$10,124	$10,124	$10,124
Kahe P/L reimbsuable/variable. O&M	G0005400	PIF 230 KTF NE NPIZZZZZ 501	$18,593	$11,273	$22,586
		Monthly Total	$56,422	$49,102	$60,415

ACCOUNT /PROJECT/WORK ORDER #			APR.	MAY	JUN.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Kahe Pipeline Facilities Fees	HP001037	PIF 230 KTF NE NPIZZZZZ 501	$27,981	$27,981	$27,981
Kahe P/L pumping & heating station O&	HP001038	PIF 230 KTF NE NPIZZZZZ 501	$10,228	$10,228	$10,228
Kahe P/L reimbsuable/variable. O&M	G0005400	PIF 230 KTF NE NPIZZZZZ 501	$13,212	$36,389	$22,489
		Monthly Total	$51,421	$74,598	$60,698

2001 MAINTENANCE & FACILITY CHARGES - Actual

ACCOUNT /PROJECT/WORK ORDER #			JUL.	AUG.	SEP.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Kahe Pipeline Facilities Fees	HP001037	PIF 230 KTF NE NPIZZZZZ 501	$28,860	$28,860	$28,860
Kahe P/L pumping & heating station O&	HP001038	PIF 230 KTF NE NPIZZZZZ 501	$10,512	$10,512	$10,512
Kahe P/L reimbsuable/variable. O&M	G0005400	PIF 230 KTF NE NPIZZZZZ 501	$3,975	$51,537	$47,990
		Monthly Total	$43,348	$90,910	$87,363

ACCOUNT /PROJECT/WORK ORDER #			OCT.	NOV.	DEC.	2001 Y-T-D Invoice
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice	
Kahe Pipeline Facilities Fees	HP001037	PIF 230 KTF NE NPIZZZZZ 501	$28,659	$28,659	$28,659	**$339,617**
Kahe P/L pumping & heating station O&	HP001038	PIF 230 KTF NE NPIZZZZZ 501	$10,418	$10,418	$10,418	**$123,846**
Kahe P/L reimbsuable/variable. O&M	G0005400	PIF 230 KTF NE NPIZZZZZ 501	$1,870	$2,103	$1,102	**$233,121**
		Monthly Total	$40,947	$41,180	$40,179	**$ 696,583.70**

2002 MAINTENANCE & FACILITY CHARGES - Actual

ACCOUNT /PROJECT/WORK ORDER #			JAN.	FEB,	MAR.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Kahe Pipeline Facilities Fees	HP001308	PIF 230 KTF NE NPIZZZZZ 501	$29,010	$29,010	$29,010
Kahe P/L pumping & heating station O&	HP001309	PIF 230 KTF NE NPIZZZZZ 501	$10,427	$10,427	$10,427
Kahe P/L reimbsuable/variable. O&M	G0007105	PIF 230 KTF NE NPIZZZZZ 501	$1,391	$5,272	$11,250
		Monthly Total	$40,829	$44,709	$50,687

ACCOUNT /PROJECT/WORK ORDER #			APR.	MAY	JUN.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Kahe Pipeline Facilities Fees	HP001308	PIF 230 KTF NE NPIZZZZZ 501	$29,111	$29,111	$29,111
Kahe P/L pumping & heating station O&	HP001309	PIF 230 KTF NE NPIZZZZZ 501	$10,370	$10,370	$10,370
Kahe P/L reimbsuable/variable. O&M	G0007105	PIF 230 KTF NE NPIZZZZZ 501	$5,276	$10,463	$462
		Monthly Total	$44,757	$49,944	$39,943

2002 MAINTENANCE & FACILITY CHARGES - Actual

ACCOUNT /PROJECT/WORK ORDER #			JUL.	AUG.	SEP.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Kahe Pipeline Facilities Fees	HP001308	PIF 230 KTF NE NPIZZZZZ 501	$29,186	$29,186	$29,186
Kahe P/L pumping & heating station O&	HP001309	PIF 230 KTF NE NPIZZZZZ 501	$10,370	$10,370	$10,370
Kahe P/L reimbsuable/variable. O&M	G0007105	PIF 230 KTF NE NPIZZZZZ 501	$680	$918	$30,234
		Monthly Total	$40,236	$40,474	$69,790

ACCOUNT /PROJECT/WORK ORDER #			OCT.	NOV.	DEC.	2002
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice	Y-T-D Invoice
Kahe Pipeline Facilities Fees	HP001308	PIF 230 KTF NE NPIZZZZZ 501	$29,035	$29,035	$29,035	**$349,029**
Kahe P/L pumping & heating station O&	HP001309	PIF 230 KTF NE NPIZZZZZ 501	$10,399	$10,399	$10,398	**$124,696**
Kahe P/L reimbsuable/variable. O&M	G0007105	PIF 230 KTF NE NPIZZZZZ 501	$655,181	$480,513	$48,958	**$1,250,597**
		Monthly Total	$694,615	$519,947	$88,391	**$ 1,724,321.14**

2003 MAINTENANCE & FACILITY CHARGES - Actual

ACCOUNT /PROJECT/WORK ORDER #			JAN.	FEB,	MAR.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Kahe Pipeline Facilities Fees	HP001582	PIF 230 KTF NE NPIZZZZZ 501	$29,136	$29,136	$29,133
Kahe P/L pumping & heating station O&	HP001583	PIF 230 KTF NE NPIZZZZZ 501	$10,431	$10,429	$10,426
Kahe P/L reimbsuable/variable. O&M	G0008203	PIF 230 KTF NE NPIZZZZZ 501	$386	$84,589	$228
		Monthly Total	$39,953	$124,154	$39,787

ACCOUNT /PROJECT/WORK ORDER #			APR.	MAY	JUN.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Kahe Pipeline Facilities Fees	HP001582	PIF 230 KTF NE NPIZZZZZ 501	$29,559	$29,559	$29,559
Kahe P/L pumping & heating station O&	HP001583	PIF 230 KTF NE NPIZZZZZ 501	$10,581	$10,578	$10,578
Kahe P/L reimbsuable/variable. O&M	G0008203	PIF 230 KTF NE NPIZZZZZ 501	$139	$1,586	$54,720
		Monthly Total	$40,279	$41,723	$94,857

2003 MAINTENANCE & FACILITY CHARGES - Actual

ACCOUNT /PROJECT/WORK ORDER #			JUL.	AUG.	SEP.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Kahe Pipeline Facilities Fees	HP001582	PIF 230 KTF NE NPIZZZZZ 501	$29,810	$29,810	$29,810
Kahe P/L pumping & heating station O&	HP001583	PIF 230 KTF NE NPIZZZZZ 501	$10,768	$10,768	$10,768
Kahe P/L reimbsuable/variable. O&M	G0008203	PIF 230 KTF NE NPIZZZZZ 501	$7,988	$1,088	$220,096
		Monthly Total	$48,566	$41,666	$260,674

ACCOUNT /PROJECT/WORK ORDER #			OCT.	NOV.	DEC.	2003
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice	Y-T-D Invoice
Kahe Pipeline Facilities Fees	HP001582	PIF 230 KTF NE NPIZZZZZ 501	$29,635	$29,635	$29,635	**$354,419**
Kahe P/L pumping & heating station O&	HP001583	PIF 230 KTF NE NPIZZZZZ 501	$10,683	$10,683	$10,683	**$127,376**
Kahe P/L reimbsuable/variable. O&M	G0008203	PIF 230 KTF NE NPIZZZZZ 501	$1,332	$390	$9,800	**$382,341**
		Monthly Total	$41,649	$40,708	$50,118	**$ 864,136.33**

2004 MAINTENANCE & FACILITY CHARGES - Actual

COUNT /PROJECT/WORK ORDER #			JAN.	FEB,	MAR.
on	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
	HP001769	PIF 230 KTF NE NPIZZZZZ 501	$29,635	$29,635	$29,635
station O&	HP001770	PIF 230 KTF NE NPIZZZZZ 501	$10,701	$10,701	$10,701
le. O&M	G0009576	PIF 230 KTF NE NPIZZZZZ 501	$4,491	$47,430	$52,170
		Monthly Total	$44,827	$87,766	$92,506

COUNT /PROJECT/WORK ORDER #			APR.	MAY	JUN.
on	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
	HP001769	PIF 230 KTF NE NPIZZZZZ 501	$31,218	$31,218	$31,218
station O&	HP001770	PIF 230 KTF NE NPIZZZZZ 501	$11,118	$11,118	$11,118
le. O&M	G0009576	PIF 230 KTF NE NPIZZZZZ 501	$260	$6,709	$198
		Monthly Total	$42,596	$49,045	$42,533

2004 MAINTENANCE & FACILITY CHARGES - Actual

COUNT /PROJECT/WORK ORDER #			JUL.	AUG.	SEP.
on	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
	HP001769	PIF 230 KTF NE NPIZZZZZ 501	$31,871	$31,871	$31,871
station O&	HP001770	PIF 230 KTF NE NPIZZZZZ 501	$11,367	$11,365	$11,365
le. O&M	G0009576	PIF 230 KTF NE NPIZZZZZ 501	$5,215	$0	$1,291
		Monthly Total	$48,453	$43,236	$44,527

COUNT /PROJECT/WORK ORDER #			OCT.	NOV.	DEC.	2004 Y-T-D
on	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice	Invoice
	HP001769	PIF 230 KTF NE NPIZZZZZ 501	$31,820	$31,820	$41,687	**$383,498**
station O&	HP001770	PIF 230 KTF NE NPIZZZZZ 501	$11,432	$11,432	not received	**$122,419**
le. O&M	G0009576	PIF 230 KTF NE NPIZZZZZ 501	$2,446	$16,139	not received	**$136,347**
		Monthly Total	$45,697	$59,390	$41,687	**$ 642,264.04**

	le/variable O&M total in 2003 dollars	
1	$240,567	
7	$1,269,800	
1	$382,341	(11 months of expense)
7		
		$ 1,892,708.58
		$ 630,903
		$ 644,783
		$ 658,323

Hawaiia ric Company, Inc.

BASIS OF REVISED COMPUTATION: TEST YEAR FUEL RELATED EXPENSES

ol Facility Costs Before Prorata Allocations:

Fee - Kahe	$	564,674	= $163,288 monthly Base Fee, of which $114,302 escalated quarterly at 2.1% annual rate starting April 2005, prorated by the relative distance of Kahe pipeline to system, (5.144/(5.144+12.804)); estimate is based solely upon calculation of contractually stipulated fee discussed in this response..
Fee - Waiau	$	1,405,537	= $163,288 monthly Base Fee of which $114,302 escalated quarterly at 2.1% annual rate starting April 2005, prorated by relative distance of the Waiau pipeline to system, (12.804/(5.144+12.804)); estimate is based solely upon calculation of contractually stipulated fee discussed in this response..
ase Maintenance - Kahe	$	658,323	= normalized (1/3) average reimbursable/variable maintenance 2001-2003 in 2005 dollars; detail of historical data is shown on pages 13 - 15 of this response; normalization and conversion into 2005 dollars is shown on page 21 of this response.
ase Maintenance - Waiau	$	62,114	= engineering estimate of maintenance on first year of new pipeline in lieu of historical average cost for different pipeline; reference discussion in page 6 of this response.
Services	$	862,002	= $24,725 montthly Base Fee of which $1,219 escalated quarterly at 2.1% annual rate starting April 2005, plus normalized (1/3) average steam cost 2001-2003 in 2005 dollars of $373,954, plus normalized (1/3) average reimbursable/variable maintenance 2001-2003 in 2005 dollars of $56,421, plus normalized (1/11) major fuel storage tank cleaning/inspection/maintenance/repair of $139,012); detail historical data for steam and reimbursable/variable maintenance is shown on pages 6 - 8 of the response to CA-IR-136, historical data for major tank work, normalization of all costs and conversion of steam and reimbursable/ variable cost into 2005 dollars is shown on page 10 of the response to CA-IR-136.
Total		$3,552,649	

its to be Allocated:

andling Expenses:	
plant environmental labor erhead	$7,895
nfo sys non-labor for fuel stems	$20,496
division labor, non-labor and ads	$300,835
	$329,225

ata Share Calculations

shares:

	Kahe	Waiau	Honolulu	Other	Total
pes	$52,329	$130,252			$182,580
ance	$61,007	$5,756		$79,882	$146,645
	$113,336	$136,008	$0	$79,882	$329,225

ls with Prorata Share of Fuel Handling Expenses

	Kahe	Waiau	Honolulu	Other	Total
s Base Fee w/o Prorata ndling Expense	$564,674	$1,405,537			$1,970,211
Fuel Handling Expense	$52,329	$130,252			$182,580
cilities Base Fee	$617,002	$1,535,789	$0	$0	$2,152,791
s Non-Base Maintenance ata Fuel Handling Expense	$658,323	$62,114			$720,437
Fuel Handling Expense	$61,007	$5,756			$66,763
cilities Non-Base ance	$719,330	$67,870	$0	$0	$787,200
rm Services w/o Prorata ndling Expense				$862,002	$862,002
Fuel Handling Expense				$79,882	$79,882
nk Farm Services	$0	$0	$0	$941,884	$941,884
o Prorata Share					$3,552,649
rata Share					$329,225
h Prorata Share					$3,881,875
					$3,881,875

CA-IR-132
DOCKET NO. 04-0113
PAGE 22 OF 23

Hawaiian Electric Company, Inc.

TEST YEAR FUEL RELATED EXPENSES - REVISED HECO-WP-410
($000)

Line	Description	(A) Kahe	(B) Waiau	(C) Honolulu	(D) Other	(E) = (A)+(B)+(C)+(D) (E) Total
1.	Facilities Base Fee	617	1,536	-	-	2,153
2.	Pipeline Maintenance	719	68	-	-	787
3.	Tankfarm Management Fee	-	-	-	942	942
4.	In-House Fuel Handling					
5.	Production	-	-	-	-	-
6.	Environmental	-	-	-	-	-
7.	Total	1,336	1,604	-	942	3,882

CA-IR-133

Ref: T-4, Page 24, Lines 19 – 22.

a. Please provide the HECO Kahe pipeline Facility and throughput Charges for each of the years 2001, 2002, 2003 and 2004, incurred under the terms and conditions of the existing Facilities and Operations Contract with Chevron.

b. Please provide a description and all workpapers showing the adjustment to 2005 dollars.

HECO Response:

a. See tables submitted in response to CA-IR-132 for:

1. pipeline throughput charged by Chevron for LSFO transferred from BPTF to HECO's Kahe plant by month for 2001, 2002, 2003 and year-to-date 2004 on pages 9 through 12, respectively;

2. pipeline throughput charged by Chevron for LSFO delivered directly from the Chevron refinery to HECO's Kahe plant by month for 2001, 2002, 2003 and year-to-date 2004 on pages 13 through 16, respectively;

3. monthly charges for facilities fees, pumping and heating station maintenance and reimbursable/variable costs billed monthly by Chevron for direct labor, materials and contract services, including contractually stipulated markup for the cost of work administration, documentation and billing for 2001, 2002, 2003 and year-to-date 2004 on pages 17 through 20, respectively;

b. The spreadsheet submitted in response to CA-IR-132, page 21, shows the conversion of the annual totals of the respective monthly billings for throughput and the other various pipeline charges referenced in part a into 2005 dollars.

CA-IR-134
Ref: T-4, Page 25, Line 17.

Please provide a detailed explanation and complete copies of all supporting documentation for the assumption made that Kahe pipeline costs estimated at $783,000 are reasonable to use as a "proxy" for the Chevron Waiau pipeline charges in the test year.

HECO Response:

The figure of $783,000 was the combined average of the Kahe pipeline facility fees and pipeline throughput fees of $726,000 (the figure was incorrect as it inadvertently excluded throughput on LSFO shipped directly from the Chevron refinery to the Kahe plant, which understated the computed annual average Kahe pipeline charges by $59,484 as discussed in the response to CA-IR-132) with the balance being a prorata share (allocated on the basis of dollar of expense) of Fuel Handling Expenses of $329,225, which is shown on the spreadsheet on page 22 of the response to CA-IR-132 and remains unchanged from that embedded in the individual components of the Test Year Fuel Related Expenses in HECO-WP-410 as filed with the application on November 12, 2004. As discussed later in this response, the use of the historical Kahe pipeline costs as a proxy for the corresponding operations and routine maintenance charges to be incurred with respect to the new HECO Waiau pipeline is obviated by the execution in December 2004 of successor agreements to the Facilities and Operating contract between Chevron and HECO under whose provisions such historical costs were incurred.

The level of historical costs incurred for the operation and routine maintenance of the

annual historical level of expenditure (in excess of $1.7 million in 2005 dollars) characteristic of the Barbers Point to Waiau segment of the older, less sophisticated Chevron Black Oil pipeline, because of the similarity in ownership and operating mode of the two HECO pipelines::

1. In providing operating and maintenance capabilities for the new HECO Waiau pipeline, Chevron was providing services for a HECO-owned pipeline, as is the Kahe Pipeline, rather than for a Chevron-owned pipeline, as is the previously utilized Chevron Black Oil pipeline; and
2. the operating mode of the new HECO Waiau pipeline would be the same continuous-flow operation as utilized in the case of the Kahe pipeline, that is LSFO would be pumped through the pipeline continuously, except for short-term interruptions due to tank switches/changes and valve line up at the BPTF or plant fuel storage end (typically 1 – 2 hours duration) and scheduled maintenance (typically from 7 to 14 days duration once per year, or less often). This continuous mode of operations is possible because of the correspondence between the Kahe pipelines flow rate operating range and the Kahe Plant's range of fuel consumption rates. Shipments of LSFO through the Chevron Black Oil pipeline, whether to Iwilei or to Waiau, were made in the batch flow mode of operation. A batch shipment mode of operation was necessitated by the need to maintain a high flow rate (1,200 barrels per hour, 28,800 barrels per day) relative to the daily rate of fuel consumption of HECO's Waiau Plant (typically about 5,000 barrels per day) and Honolulu Plant (typically 750 barrels per day) due to the length of the un-insulated pipeline and the temperature drop suffered by the LSFO, which solidifies at ambient temperature, during shipment. Batch transfers of LSFO

would occur over a period of about 3 to 4 days at intervals of about 10 to 14 days for shipments typically sized from 50,000 barrels to 80,000 barrels of LSFO moved from Barbers Point (BPTF or Chevron refinery) to Waiau plant storage. Batch transfers of LSFO would occur over a period of from 2 to 3 days every 3 to 6 weeks for shipments typically sized from 20,000 barrels to 40,000 barrels of LSFO moved from Barbers Point (BPTF or Chevron refinery) to the Iwilei storage facility. Such a mode of operation required the employment of from one half fill volume to one entire pipeline fill volume of heated pipeline displacement medium (typically lower viscosity light fuel oil, liquid at ambient temperature), termed "warm up stock" in the then current Facilities and Operating Contract with Chevron, in order to raise the pipe's temperature and minimize heat loss of the leading edge of LSFO in the transferred batch. Chevron was required to receive the cool displacement media resident in the pipeline prior to the introduction of warm up stock, which was then followed by the LSFO to be delivered, at their Honolulu Marine Terminal. Subsequent to the collection of the maximum amount of displacement and warm up stocks, Chevron returned such materials to the point of origin, the Chevron refinery at Barbers Point, via pumping over a several day period. The different routing of the new HECO Waiau pipeline, generally farther from the water (ocean or Pearl Harbor) in the State Energy Corridor and its insulation allows a much reduced flow rate (down to about 125 barrels per hour, 3,000 barrels per day) which can be continuous as it corresponds to the lower boundary of the Waiau Plant's rate of fuel consumption.

The execution of a successor contract to the Facilities and Operating contract on December 14, 2004, the Operations and Maintenance Agreement, provides a single Base Fee, a portion of which is subject to quarterly escalation, for operations and routine maintenance of the HECO's fuel facilities. The amount of the Base Fee, which is billed monthly, and its allocation to the operations and routine maintenance of the HECO Kahe pipeline and HECO Waiau pipeline is discussed in the response to CA-IR-132. Hence, the use of historical Kahe pipeline charges as a "proxy" for certain of the costs pertaining to the operation of the new Waiau pipeline has been obviated by the execution of the Operations and Maintenance Agreement which provides a stipulated charge, a portion of which is allocable to the operation and routine maintenance of the Kahe pipeline and new Waiau pipeline.

CA-IR-135

Ref: T-4, Page 26, Lines 2 – 5.

a. Please provide the HECO Kahe pipeline Maintenance Charge for each of the years 2001, 2002, 2003 and 2004, incurred under the terms and conditions of the existing Facilities and Operations Contract with Chevron.

b. Please provide a description and all workpapers showing the adjustment to 2005 dollars.

HECO Response:

a. Historical monthly billings for the types of pipeline maintenance invoiced under the terms and conditions of the Facilities and Operating Contract between HECO and Chevron, including pumping and heating station maintenance and reimbursable/variable costs for Chevron's direct labor, materials and contract services, including markup for the cost of work administration, documentation and billing, for calendar years 2001, 2002, 2003 and year-to-date 2004 are shown on pages 17 through 20, respectively, of the response to CA-IR-132.

b. See response to CA-IR-132 including the discussion on pages 5 – 6 and spreadsheet on

aggregate amount charged by Chevron to operate and perform routine maintenance on HECO's Kahe pipeline into pipeline throughput (billed on a cost per unit shipped basis), facilities fees (fixed amount subject to quarterly escalation, billed monthly) and pumping and heating station maintenance (fixed amount subject to quarterly escalation, billed monthly) is not continued under the terms of this new agreement. The aggregate amount charged by Chevron to operate and perform routine maintenance on all of the fuel facilities (now all tightly integrated HECO-owned facilities) are combined in a single "Base Fee," which is a fixed amount, including a portion of subject to quarterly escalation. A second type of periodic charge is called "Non-Base Maintenance," which reimburses Chevron for their direct costs for labor, materials and other costs plus a stipulated mark up for the cost of work administration, documentation and billing. This type of charge corresponds to the same kind of reimbursable/ variable operations and maintenance costs charged under the earlier Facilities and Operating Contract. The elimination of the pumping and heating station maintenance charge, as discussed in the response to CA-IR-132, and the consolidation of routine maintenance into the new "Base Fee" has a significant impact on the revised test year expense for HECO's Kahe pipeline: the Pipeline Maintenance

category of annual expense declines from about $915,000 to $719,000, though the basis of the test year expense estimate for reimbursable/variable type of charges, now called "Non-Base Maintenance" in the provisions of the new Operations and Maintenance Agreement with Chevron, remains a 3-year average of historical annual expenditures. Both expense estimates include a corresponding prorata share (allocated on the basis of dollar of expense) of Fuel Handling Expenses, the aggregate amount of which is unchanged.

Historical expenses by month for reimbursable/variable type direct costs including the described fixed mark up for years for calendar years 2001, 2002, 2003 and year-to-date 2004 are

shown on pages 16 through 19, respectively, of the response to CA-IR-132 as noted in part a of this response. The (1/3) normalization of the expenses for years 2001, 2002 and 2003 and the expression of this normalized average amount in 2005 dollars is shown on page 20 of the response to CA-IR-132 as noted in the response to part b above. The computation of the revised test year expense for Kahe pipeline maintenance is shown in the data provided on page 21 and revised HECO-WP-410 on page 22 of the response to CA-IR-132, respectively.

CA-IR-136

Ref: T-4, Page 27, Lines 14 – 19.

a. Please provide the HECO Kahe Pipeline Base Fee for each of the years 2001, 2002, 2003 and 2004, incurred under the terms and conditions of the existing Facilities and Operations Contract with Chevron.

b. Please provide a description and all workpapers showing the adjustment to 2005 dollars.

HECO Response:

There appears to be an inconsistency between the subject of the reference of the information request shown above, "T-4, Page 27, Lines 14 – 19, " which deals with fuel related test year expenses pertaining to HECO's Barbers Point Tank Farm ("BPTF"), and the text of part a of the information request above to "Kahe Pipeline Base Fee." Inasmuch as HECO has provided historical expenses for the Kahe pipeline in the responses to CA-IR-132 and has discussed Kahe pipeline expense estimates also in the responses to CA-IR-133 and CA-IR-135, HECO assumes that the reference to the section of the testimony pertaining to HECO's BPTF (BPTF, Tankfarm or Tankfield are synonyms used variously in contracts, internal documents and data series) for the test year is the correct subject of this information request and will respond accordingly.

a. Historically BPTF has incurred three types of operations and maintenance expenses:

1. BPTF "Base Fee" and referred to as "Tankfarm fees" is conceptually analogous to the Facilities Fees imposed for the operations and maintenance of the Kahe pipeline and Chevron Black Oil pipeline and is levied under the terms and conditions of the same Facilities and Operating contract. The Base Fee consists of a contractually stipulated base amount that is subject to quarterly escalation.

2. The second type of expense reflects the cost of low pressure steam sold by

Chevron for use by HECO in the heating of the BPTF fuel storage tanks. The steam is supplied by Chevron from their refinery located adjacent to the BPTF property in Campbell Estate Industrial Park at Barbers Point. This steam is priced at $3.00 per 1,000 lbs consumed monthly subject to up or down adjustment by the ratio of the current price of Low Sulfur Fuel Oil ("LSFO") sold by Chevron to HECO under the terms and condition of the LSFO Supply Contract then in effect to $15.50 per barrel.

3. Reimbursable/variable operations and maintenance expense is the cost of Chevron's direct labor, materials and contract services plus a fixed markup for the cost of work administration, documentation and billing. Alternatively, in instances (largely pertaining solely to the fuel storage tank structures) where HECO judged it had the expertise and experience from analogous work at its own plant fuel storage facilities, to hire and supervise maintenance and repair contractors, HECO exercised an option to perform the activity itself. The terms and conditions under which such expenses are billed by Chevron are incorporated in the same Facilities and Operating Contract between Chevron and HECO referenced in respect to the charges for the operations and maintenance of HECO's Kahe Pipeline discussed in the response to CA-IR-132 and CA-IR-135..

Invoiced expenses of these three types by month for the years 2001, 2002, 2003 and year-to-date 2004 are shown on pages 6, 7, 8 and 9 of this response, respectively.

Unlike the case for pipelines, for which in-line inspection and major maintenance, such as pipeline section replacement, occurs every 2 to 3 years, periodic major

maintenance activity in BPTF consists largely of such activities as tank cleaning, bottom thickness inspection and measurement, bottom plate repair, bottom/lower side wall epoxy coating and other related maintenance and repair to the three fuel storage tanks in the facility occur on a very long cycle – currently about 11 years. The three LSFO storage tanks in BPTF last went through the cleaning, inspection, maintenance and repair processes in 1995, 1996 and 1997, respectively, and are scheduled to again go through this maintenance cycle in 2006, 2007 and 2008, respectively, each tank taking from 9 to

[redacted]

12 months to complete cleaning, inspection, maintenance and repair. The actual annual amounts of such major maintenances for the years 1995 through 1997 are shown on page 10 which also shows the conversion of annual average historical costs from nominal to 2005 dollars. Thus included in the Tankfarm management fee is the normalized (1/11) amount of the major tank maintenance, $139,012, in addition to the normalized (1/3) of the three year average reimbursable/variable O&M incurred from 2001 through 2003, $56,421, the latter figure expressed in 2005 dollars.

b. The spreadsheet on page 10, referenced in part a., includes the basis of the computation

facility by truck and the integration of the Waiau and HECO Kahe pipelines with newly installed and expanded pumping and heating capabilities within BPTF as well as new supervisory control and leak detection system software and hardware.

One new agreement, the "Operations and Maintenance Agreement," provides for the operations and maintenance of the Kahe Pipeline, Waiau Pipeline and BPTF with a single consolidated "Base Fee," a portion of which is subject to quarterly escalation, billed monthly; and "Non-Base Maintenance," which is of the reimbursable/variable type consisting of a monthly billing for costs such as direct labor, materials and contract services incurred by Chevron, plus a fixed markup for Chevron's cost of work administration, documentation and billing. This agreement is discussed in the response to CA-IR-132. Such charges are conceptually the same as the types of corresponding reimbursable/variable direct costs incurred under the predecessor Facilities and Operating Contract shown on pages 6 through 9 of this response and are subject to the same amount and type of stipulated mark up as compensation for the cost of billing and work administration. The normalized (1/3) amount of actual historical expense is included in the "BPTF Services" cost category in the spreadsheet on page 22 of the response to CA-IR-132 and in the "Tankfarm Management Fee" cost classification, which is shown on the revised HECO-WP-410, page 23 of the response to CA-IR-132. The (1/11) normalized amount for major tank cleaning/inspection/maintenance as described in part a of this response and shown on page 10 of this response is similarly included in the referenced spreadsheets as is a prorata share (allocated on the basis of dollar of expense) of Fuel Handling Expenses, the aggregate amount of the aggregate amount of which, $329,225, is shown on the spreadsheet on page 22 of the response to CA_IR-132 and remains unchanged from that embedded in the individual components of the version of the Test Year Fuel Related Expenses in

HECO-WP-410, submitted in the test year application filing, a revised version of which is shown on page 23 of the response to CA-IR-132.

The second new agreement, the "Barbers Point Tank Farm Services Agreement," provides for low-pressure steam, fire water, incipient fire response and certain other services which had previously been provided under the terms and conditions of the Facilities and Operating Contract. The fee structure of the new BPTF Services Agreement provides for two types of charges, a "Base Fee," a fixed amount, a portion of which is subject to quarterly escalation, billed monthly, and a second charge for the supply of low pressure steam for tank heating, the basis for the cost of which is unchanged from the terms of the corresponding provisions of the Facilities and Operating Contract and is described in part a of this response. Historical amounts billed monthly for steam are shown in the tables on pages 6 through 9 of this response and the resulting computation of an estimated expense for steam based upon a normalization of annual actual historical expense and its expression in 2005 dollars is shown on page 10 of this response. The computation of the Base Fee for the test year and the proration of Fuel Handling Expenses are shown in the spreadsheet on page 22 of the response to CA-IR-132. The effect of the new fee structure under the new Barbers Point Tank Farm Services Agreement is to reduce the test year expense category corresponding to "Tankfarm Management Fee" on the revised HECO-WP-410 on page 23 of the response to CA-IR-!32 from $1,637,000 to $942,000. Both cost figures include a corresponding prorata share of the Fuel Handling Expenses, the aggregate amount of which, $329,225, is shown on the spreadsheet on page 22 of the response to CA-IR-132, unchanged from the amount embedded in the individual components of the version of the Test Year Fuel Related Expenses in HECO-WP-410, submitted in the test year application filing, a revised version of which is shown on page 23 of the response to CA-IR-132. .

2001 MAINTENANCE & FACILITY CHARGES - Actual

ACCOUNT /PROJECT/WORK ORDER #			JAN.	FEB,	MAR.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Tankfield Fees	HP001031	PIF 230 BPT NE NPIZZZZZ 501	$72,545	$72,545	$72,545
Tankfield Steam	HP001032	PIF 230 BPT NE NPIZZZZZ 501	$28,616	$27,115	$28,161
Tankfield Var. O&M	G0005397	PIF 230 BPT NE NPIZZZZZ 501	$0	$0	$0
		Monthly Total	$101,161	$99,660	$100,706

ACCOUNT /PROJECT/WORK ORDER #			APR.	MAY	JUN.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Tankfield Fees	HP001031	PIF 230 BPT NE NPIZZZZZ 501	$73,202	$73,202	$73,202
Tankfield Steam	HP001032	PIF 230 BPT NE NPIZZZZZ 501	$26,670	$35,001	$23,364
Tankfield Var. O&M	G0005397	PIF 230 BPT NE NPIZZZZZ 501	$0	$0	$47,976
		Monthly Total	$99,872	$108,203	$144,542

2001 MAINTENANCE & FACILITY CHARGES - Actual

ACCOUNT /PROJECT/WORK ORDER #			JUL.	AUG.	SEP.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Tankfield Fees	HP001031	PIF 230 BPT NE NPIZZZZZ 501	$75,291	$75,291	$75,291
Tankfield Steam	HP001032	PIF 230 BPT NE NPIZZZZZ 501	$40,413	$34,176	$38,736
Tankfield Var. O&M	G0005397	PIF 230 BPT NE NPIZZZZZ 501	$0	$0	$0
		Monthly Total	$115,705	$109,468	$114,027

ACCOUNT /PROJECT/WORK ORDER #			OCT.	NOV.	DEC.	2001 Y-T-D Invoice
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice	
Tankfield Fees	HP001031	PIF 230 BPT NE NPIZZZZZ 501	$74,813	$74,813	$74,813	**$887,554**
Tankfield Steam	HP001032	PIF 230 BPT NE NPIZZZZZ 501	$18,055	$28,142	$17,386	**$345,836**
Tankfield Var. O&M	G0005397	PIF 230 BPT NE NPIZZZZZ 501	$0	$0	$109,217	**$157,193**
		Monthly Total	$92,869	$102,955	$201,416	**$ 1,390,582.99**

2002 MAINTENANCE & FACILITY C.. .RGES - Actual

ACCOUNT /PROJECT/WORK ORDER #

Current Description	Proj/W.O. #	ABM Code Block #	JAN. Invoice	FEB, Invoice	MAR. Invoice
Tankfield Fees	HP001311	PIF 230 BPT NE NPIZZZZZ 501	$75,650	$75,650	$75,650
Tankfield Steam	HP001312	PIF 230 BPT NE NPIZZZZZ 501	$15,854	$16,104	$25,907
Tankfield Variable O&M	G0007107	PIF 230 BPT NE NPIZZZZZ 501	$0	$0	$0
		Monthly Total	$91,503	$91,754	$101,556

ACCOUNT /PROJECT/WORK ORDER #

Current Description	Proj/W.O. #	ABM Code Block #	APR. Invoice	MAY Invoice	JUN. Invoice
Tankfield Fees	HP001311	PIF 230 BPT NE NPIZZZZZ 50	$75,888	$75,888	$75,888
Tankfield Steam	HP001312	PIF 230 BPT NE NPIZZZZZ 50	$16,447	$29,836	$25,631
Tankfield Variable O&M	G0007107	PIF 230 BPT NE NPIZZZZZ 50	$0	$0	$0
		Monthly Total	$92,335	$105,724	$101,519

2002 MAINTENANCE & FACILITY CHARGES - Actual

ACCOUNT /PROJECT/WORK ORDER #

Current Description	Proj/W.O. #	ABM Code Block #	JUL. Invoice	AUG. Invoice	SEP. Invoice
Tankfield Fees	HP001311	PIF 230 BPT NE NPIZZZZZ 50	$76,067	$76,067	$76,067
Tankfield Steam	HP001312	PIF 230 BPT NE NPIZZZZZ 50	$26,497	$21,062	$32,157
Tankfield Variable O&M	G0007107	PIF 230 BPT NE NPIZZZZZ 50	$0	$0	$0
		Monthly Total	$102,564	$97,129	$108,224

ACCOUNT /PROJECT/WORK ORDER #

Current Description	Proj/W.O. #	ABM Code Block #	OCT. Invoice	NOV. Invoice	DEC. Invoice	2002 Y-T-D Invoice
Tankfield Fees	HP001311	PIF 230 BPT NE NPIZZZZZ 50	$75,709	$75,709	$75,709	**$909,941**
Tankfield Steam	HP001312	PIF 230 BPT NE NPIZZZZZ 50	$25,040	$44,029	$25,821	**$304,385**
Tankfield Variable O&M	G0007107	PIF 230 BPT NE NPIZZZZZ 50	$0	$0	$0	**$0**
		Monthly Total	$100,749	$119,738	$101,529	**$ 1,214,326.02**

BPTF_OM_CHARGES_2001-2004.xls

2003 MAINTENANCE & FACILITY CHARGES - Actual

ACCOUNT /PROJECT/WORK ORDER #			JAN.	FEB,	MAR.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Tankfield Fees	HP001576	PIF 230 BPT NE NPIZZZZZ 501	$75,947	$75,947	$75,943
Tankfield Steam	HP001577	PIF 230 BPT NE NPIZZZZZ 501	$34,255	$21,757	$43,640
Tankfield Variable O&M	G0008204	PIF 230 BPT NE NPIZZZZZ 501	$0	$0	$0
		Monthly Total	$110,202	$97,704	$119,583

ACCOUNT /PROJECT/WORK ORDER #			APR.	MAY	JUN.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Tankfield Fees	HP001576	PIF 230 BPT NE NPIZZZZZ 50	$76,958	$76,958	$76,958
Tankfield Steam	HP001577	PIF 230 BPT NE NPIZZZZZ 50	$47,512	$34,337	$46,612
Tankfield Variable O&M	G0008204	PIF 230 BPT NE NPIZZZZZ 50	$0	$0	$0
		Monthly Total	$124,469	$111,295	$123,570

2003 MAINTENANCE & FACILITY CHARGES - Actual

ACCOUNT /PROJECT/WORK ORDER #			JUL.	AUG.	SEP.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Tankfield Fees	HP001576	PIF 230 BPT NE NPIZZZZZ 50	$77,554	$77,554	$77,554
Tankfield Steam	HP001577	PIF 230 BPT NE NPIZZZZZ 50	$20,824	$33,428	$33,692
Tankfield Variable O&M	G0008204	PIF 230 BPT NE NPIZZZZZ 50	$0	$0	$0
		Monthly Total	$98,378	$110,983	$111,246

ACCOUNT /PROJECT/WORK ORDER #			OCT.	NOV.	DEC.	
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice	
Tankfield Fees	HP001576	PIF 230 BPT NE NPIZZZZZ 50	$77,137	$77,137	$77,137	
Tankfield Steam	HP001577	PIF 230 BPT NE NPIZZZZZ 50	$24,225	$29,304	$39,607	
Tankfield Variable O&M	G0008204	PIF 230 BPT NE NPIZZZZZ 50	$0	$0	$0	
		Monthly Total	$101,362	$106,440	$116,744	$

2003

-T-D
ivoice

$922,784
$409,193
$0

331,977.24

2004 MAINTENANCE & FACILITY CHARGES - Actual

ACCOUNT /PROJECT/WORK ORDER #			JAN.	FEB,	MAR.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Tankfield Fees	HP001771	PIF 230 BPT NE NPIZZZZZ 501	$77,137	$77,137	$77,137
Tankfield Steam	HP001772	PIF 230 BPT NE NPIZZZZZ 501	$34,758	$45,447	$33,689
Tankfield Variable O&M	G0009577	PIF 230 BPT NE NPIZZZZZ 501	$0	$0	$0
		Monthly Total	$111,895	$122,584	$110,826

ACCOUNT /PROJECT/WORK ORDER #			APR.	MAY	JUN.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Tankfield Fees	HP001771	PIF 230 BPT NE NPIZZZZZ 501	$80,897	$80,897	$80,897
Tankfield Steam	HP001772	PIF 230 BPT NE NPIZZZZZ 501	$25,955	$31,799	$38,946
Tankfield Variable O&M	G0009577	PIF 230 BPT NE NPIZZZZZ 501	$42,960	$0	$0
		Monthly Total	$149,812	$112,696	$119,843

2004 MAINTENANCE & FACILITY CHARGES - Actual

ACCOUNT /PROJECT/WORK ORDER #			JUL.	AUG.	SEP.
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice
Tankfield Fees	HP001771	PIF 230 BPT NE NPIZZZZZ 501	$82,449	$82,449	$82,449
Tankfield Steam	HP001772	PIF 230 BPT NE NPIZZZZZ 501	$34,361	$25,308	$45,253
Tankfield Variable O&M	G0009577	PIF 230 BPT NE NPIZZZZZ 501	$0	$0	$0
		Monthly Total	$116,810	$107,757	$127,702

ACCOUNT /PROJECT/WORK ORDER #			OCT.	NOV.	DEC.	2004
Current Description	Proj/W.O. #	ABM Code Block #	Invoice	Invoice	Invoice	Y-T-D Invoice
Tankfield Fees	HP001771	PIF 230 BPT NE NPIZZZZZ 501	$82,329	$82,329	$49,267	**$935,372**
Tankfield Steam	HP001772	PIF 230 BPT NE NPIZZZZZ 501	$23,941	$41,988	not received	**$381,445**
Tankfield Variable O&M	G0009577	PIF 230 BPT NE NPIZZZZZ 501	$0	$0	not received	**$42,960**
		Monthly Total	$106,270	$124,317	$49,267	**$ 1,359,777.92**

	year	Tankfield Fees w.o. #	total actual work order	total in 2003 dollars	Tankfield Steam w.o. #	total actual work order	total in 2003 dollars	Tankfield Variable O&M w.o. #	total actual work order	total in 2003 dollars
	2001	HP001031	$887,554	$915,904	HP001032	$345,836	$356,883	G0005397	$157,193	$162,214
	2002	HP001311	$909,941	$923,914	HP001312	$304,385	$309,059	G0007107	$0	$0
	2003	HP001576	$922,784	$922,784	HP001577	$409,193	$409,193	G0008204	$0	$0
purposes	2004	HP001771	$935,372		HP001772	$391,445	(11 months of expense)	G0009577	$42,960	(11 months of expense)
	2001									
	2002									
	2003									
purposes	2004									
	total in 2003 dollars			$ 2,762,601.74			$ 1,075,135.29	as adjusted		$ 162,213.96
	annual average in 2003 dollars			$ 920,867			$ 358,378			$ 54,071
	annual average in 2004 dollars			$ 941,126			$ 366,262			$ 55,261
	annual average in 2005 dollars			$ 960,890			$ 373,954			$ 56,421

Tank cleaning, bottom inspection, re-coating and repair, if necessary
Last done: # 131 in 1995, # 132 in 1996 and # 133 in 1997.
To be done: # 131 in 2006, # 132 in 2007 and # 133 in 2008.
Normalize on 11 year cycle, sum cost estimates for all 3 tanks and divide by 11

1995:	$	550,947
1996:	$	530,739
1997:	$	447,441
total:	$	1,529,127

per year of 11 year inspection cycle: $ 139,012

ions:
eflator (2000 = 100)

2001	102.373
2002	103.945
2003	105.643

s from HECO Budgets:

2004	2.20%
2005	2.10%

GES_COMPUTATION.xls

CA-IR-137

Ref: T-4, Page 28, Lines 2 - 15.

a. For the years 2001, 2002, 2003 and 2004, please provide the fuel trucking expense in dollars and in dollars per barrel, delivered from BPTF to HECO's Iwilei tank farm.

b. Provide a comparison of the information provided in response to part a. above with the 2005 test year trucking expense and an explanation of the differences.

c. Please provide the name of the company that provided the trucking of the fuel oil for the years in part a above.

HECO Response:

a. HECO has not routinely trucked Low Sulfur Fuel Oil ("LSFO") from BPTF to the Iwilei Storage Facility prior to the expected start of such operations subsequent to the commencement of operations of the new HECO Waiau Pipeline, which occurred in mid-December, 2004. LSFO has historically been shipped to HECO's Iwilei tankfarm via the Chevron Black Oil Pipeline, incurring pipeline throughput, Facilities Fees, pumping and heating station maintenance and reimbursable/variable O&M under the terms and conditions of the Facilities and Operating Contract between HECO and Chevron. With the employment of the new HECO Waiau Pipeline to transport LSFO from BPTF to Waiau, only the relatively infrequent (every 4 to 6 weeks) and relatively small volume batch shipments to Iwilei remained to absorb the cost of operating the entire Chevron Black Oil Pipeline for the benefit of Utility fuel distribution service. Truck shipment of the relatively small volume of fuel corresponding to the average LSFO consumption rate of HECO's Honolulu Plant (less than 750 barrels per day) appeared operationally feasible when compared with larger volumes of fuel routinely trucked in neighbor island utility systems: the over 1 million barrels per year of diesel trucked from Kahului marine

terminals to the Maalaea Plant by a trucking service under contractor to Maui Electric Co. Ltd. and the nearly 500,000 barrels of diesel and No. 6 fuel oil trucked from the Chevron Hilo Terminal to various plant storage locations on the Big Island by a trucker under contract to Hawaii Electric Light Co., Inc.

b. As indicated in the response to part a, HECO did not routinely truck fuel from BPTF to Iwilei prior to 2005. Therefore, there is no basis for comparing the 2005 test year trucking expense with any prior year trucking expense. The estimate of trucking freight of $3.75 per barrel shown on HECO-405, page 2 of 3, and shown on HECO-402, page 1 of 1, was developed on the basis of contract negotiations then underway between HECO and Yamashiro Trucking for truck transport service. Subsequently, HECO commenced negotiations with a different service vendor, Bering Sea Eccotech, Inc. ("BSE"), and a trucking freight contract was executed November 24, 2004 (provides for truck transport service through December 31, 2009). Under the terms of the contract with BSE, the freight rate per unit transported between Barbers Point and HECO's Iwilei fuel storage facility (exclusive of applicable taxes) is structured on a sliding scale with the annual volume trucked as follows: a freight rate of $2.925 per barrel shall apply to barrels from 0 to 105,000 barrels transported with a calendar year; a freight rate of $2.230 per barrel shall apply to barrels from 105,001 barrels to 200,000 barrels shipped within a calendar year; and a freight rate of $1.90 per barrel shall apply to barrels in excess of 200,000 shipped within a calendar year (BSE subsequently applied for and received PUC Hawaii tariff approval, reference Local Specialized Freight Tariff 14, Section 4, Part D, Item 6405, issued January 21, 2005 and effective date January 28, 2005). On the basis of the forecast consumption of Honolulu Plant of 132,246 barrels as shown on HECO-405, page

2 of 3, applying the applicable tax rate of .044386% (inclusive of Hawaii General Excise and Public Utility taxes), the weighted average trucking freight rate per barrel would be $2.9053.per barrel. In view of the potential revision of the production simulation output submitted in the Test Year 2005 application on November 2, 2004, the estimate of the per unit fuel trucking rate and aggregate fuel trucking expense will be revised in accordance with a revised Honolulu Power Plant fuel consumption estimate. Similarly, the estimate for the trucking freight of $1.3524 per barrel shown on HECO-405, page 2 of 3, which was based upon an existing freight tariff, is expected to be revised upon subsequent information received in the form of a written proposal from a fuel trucking service vendor for un-scheduled and infrequent shipment of relatively small volumes (a minimum of 2,000 gallons) to potential distributed generation sites where the fuel will be sequentially discharged into, tentatively, three small 1,100 gallon tanks, each is connected to an individual generating unit, and a one per site 5,000 gallon auxiliary fuel storage tank. The rate for pump-equipped tanker truck and driver for loading, transporting and delivering a cargo of 4,000 gallons (95.2 barrels) is about $122 per hour for a service period of 3 hours, a cost that equates to a rate before applicable taxes of $0.0915 per gallon, or $3.843 per barrel.

c. As indicated in the response to part a, HECO did not routinely truck fuel from BPTF to Iwilei prior to 2005. Trucking of LSFO from BPTF to HECO's Iwilei Storage Facility commenced in late January, 2005, under the "Freight Transportation Contract" between HECO and Bering Sea Eccotech, Inc. ("BSE"). BSE applied for, Docket 04-0302, and received a Certificate of Public Convenience and Necessity (common carrier permit),

CA-IR-138

Ref: HECO 403, Page 1.

Please provide a copy of the Transmission Loss Study by H. Lee dated April 16, 2004 referenced in Footnote 2 and any other studies of transmission or distribution losses, prepared on or after that date.

HECO Response:

Please see HECO-WP-2220 for the HECO 2003 System Loss Analysis. The Analysis provided in HECO-WP-2220 is the support for the "Transmission Loss Study by H. Lee dated April 16, 2004".

CA-IR-139

Ref: HECO Exhibit 404, Page 2.

Please provide in electronic spreadsheet format and hard copy format the hourly output of P-MONTH Production Simulation Model for each HECO unit, including the Kalaeloa and AES units.

HECO Response:

Please see the response to CA-IR-124 where the hourly output file was submitted.

CA-IR-140

Ref: HECO-402 Petrospect Cost.

Please provide complete copies of all studies, analyses, workpapers, calculations and other

[redacted]

including documentation for historical costs actually incurred and explanations of changes or trends in such historical costs.

HECO Response:

The employment of an independent inspector to determine the quantity of LSFO [redacted]

5. taking a number of samples of the fuel being delivered and combines them into a representative composite samples to be delivered to the oil supplier's and HECO's testing laboratories; and
6. documentation of the disposition of each individual sample (the laboratory testing of such samples by the oil supplier and HECO being contractually required for the determination of quality of the delivered oil); with the independent inspector retaining a portion of a composite sample or a full set of samples in the case where multiple samples are taken, in case a dispute as to quality necessitates the testing of this "referee" sample by a third-party mainland petroleum testing laboratory.

The resulting report of the independent inspector verifies the volume of fuel invoiced and is a required document to support the processing of the fuel sales invoice for payment. Under the terms of these same fuel supply agreements, the employment of a particular independent inspector is a joint decision of the specific oil supplier and HECO and accordingly the cost of the services provided by the independent inspector are shared equally by the oil supplier and HECO as provided for in the provisions of the various fuel supply contracts.

As each bulk delivery, sale and purchase of fuel by HECO produces one or more reports of the independent inspector and related invoice for its services, there are hundreds of such billings pertaining to fuel purchases which occur during a given calendar year. A register of such invoices or a monthly summation of such costs does not exist. However, in recent years only one Hawaii vendor has been routinely employed by the oil suppliers and HECO to perform independent inspection services: Petrospect Inc. The estimate of the cost of petroleum inspection services was therefore able to be based upon a listing of the checks processed by HECO's Accounts Payable Department during calendar year 2003 as shown in the table on page 5.

However, a number of invoices were paid in a single remittance such that charges pertaining to the relatively less frequent diesel shipment inspections could not be separately identified from the much more common LSFO shipment inspections. Accordingly, the invoice files were manually reviewed to locate invoiced inspection services performed in association with diesel shipments during the last 6 months of 2003. The aggregate amount of such services was assumed to be representative of the services performed during the entire year. The aggregate amount was divided by the total volume of HECO's generating units' diesel consumption during 2003 in order to produce a costing rate. The balance of the aggregate 2003 vendor payments was assumed to pertain to LSFO shipments and the application of HECO's 2003 LSFO

seller's Barbers Point refinery. Such separate deliveries may occur over a prolonged period requiring numerous trips of the petroleum inspection vendor's personnel to the facilities of the

Accounts Payable: To Petrospect 2003

	Remittance Written Amount	Written Date	Supplier	Description
	$ 851.56	1/7/2003	5305	PETROSPECT, INC.
	$ 705.72	1/9/2003	5305	PETROSPECT, INC.
	$ 3,408.84	1/14/2003	5305	PETROSPECT, INC.
	$ 705.72	1/16/2003	5305	PETROSPECT, INC.
	$ 705.72	1/21/2003	5305	PETROSPECT, INC.
	$ 2,182.28	2/4/2003	5305	PETROSPECT, INC.
	$ 919.27	2/13/2003	5305	PETROSPECT, INC.
	$ 768.22	2/25/2003	5305	PETROSPECT, INC.
	$ 976.56	2/27/2003	5305	PETROSPECT, INC.
	$ 2,927.07	3/6/2003	5305	PETROSPECT, INC.
	$ 768.22	3/11/2003	5305	PETROSPECT, INC.
	$ 625.00	3/13/2003	5305	PETROSPECT, INC.
	$ 705.72	3/18/2003	5305	PETROSPECT, INC.
	$ 705.72	3/25/2003	5305	PETROSPECT, INC.
	$ 2,101.56	4/3/2003	5305	PETROSPECT, INC.
	$ 705.72	4/8/2003	5305	PETROSPECT, INC.
	$ 705.72	4/15/2003	5305	PETROSPECT, INC.
	$ 1,557.28	4/22/2003	5305	PETROSPECT, INC.
	$ 2,283.84	4/29/2003	5305	PETROSPECT, INC.
	$ 851.56	5/6/2003	5305	PETROSPECT, INC.
	$ 2,385.40	5/15/2003	5305	PETROSPECT, INC.
	$ 1,687.50	5/20/2003	5305	PETROSPECT, INC.
	$ 1,390.62	5/22/2003	5305	PETROSPECT, INC.
	$ 3,013.01	5/28/2003	5305	PETROSPECT, INC.
	$ 705.72	6/24/2003	5305	PETROSPECT, INC.
	$ 3,190.09	7/1/2003	5305	PETROSPECT, INC.
	$ 4,218.74	7/8/2003	5305	PETROSPECT, INC.
	$ 2,515.61	7/17/2003	5305	PETROSPECT, INC.
	$ 5,421.83	8/5/2003	5305	PETROSPECT, INC.
	$ 1,640.62	8/14/2003	5305	PETROSPECT, INC.
	$ 1,932.29	8/19/2003	5305	PETROSPECT, INC.
	$ 2,291.65	8/26/2003	5305	PETROSPECT, INC.
	$ 2,343.74	9/3/2003	5305	PETROSPECT, INC.
	$ 3,390.61	9/18/2003	5305	PETROSPECT, INC.
	$ 1,760.41	9/30/2003	5305	PETROSPECT, INC.
	$ 2,359.37	10/2/2003	5305	PETROSPECT, INC.
	$ 302.08	10/7/2003	5305	PETROSPECT, INC.
	$ 539.06	10/15/2003	5305	PETROSPECT, INC.
	$ 1,645.82	10/21/2003	5305	PETROSPECT, INC.
	$ 7,450.51	10/28/2003	5305	PETROSPECT, INC.
	$ 1,411.44	11/4/2003	5305	PETROSPECT, INC.
	$ 5,994.78	11/18/2003	5305	PETROSPECT, INC.
	$ 2,541.64	12/2/2003	5305	PETROSPECT, INC.
	$ 3,658.82	12/9/2003	5305	PETROSPECT, INC.
	$ 768.22	12/11/2003	5305	PETROSPECT, INC.
	$ 4,677.07	12/18/2003	5305	PETROSPECT, INC.
	$ 3,916.65	12/23/2003	5305	PETROSPECT, INC.
TOTAL	$ 98,314.60			

manual inspection invoice file for 7/1/03-12/31/03
aggregate billings on diesel inspections: $1719.35

$ 3,438.70	annualized
61,912	2003 diesel consumption in barrels
$ 0.0555	**per barrel of diesel consumed**

$ 94,875.90	balance of paid invoices assumed for LSFO inspections
7,655,399	2003 LSFO consumption in barrels
$ 0.0124	**per barrel of LSFO consumed**

CA-IR-141

Ref: HECO WP – 403, Page 1.

Please update this workpaper and provide comparable 2004 kWh for the Company's "no charge" and "energy sales" in megawatts.

HECO Response:

Please see the attached Excel spreadsheet that shows HECO-WP-403 updated to reflect the 2004 data.

Hawaiian Electric Company, Inc.

TEST YEAR 2005 COMPANY USE
(Updated with 2004 Data)

Line	Year	(A) Company No-Charge (MWh)	(B) Sales (MWh)	(C) = (A) ÷ (B) (C) Net Heat Rate (Btu/kWh)
1.	2000	15,515	7,211,760	0.215%
2.	2001	15,541	7,276,681	0.214%
3.	2002	15,379	7,390,367	0.208%
4.	2003	15,002	7,522,230	0.199%
5.	2004	15,521	7,732,834	0.201%
6.	Total	76,958	37,133,871	0.207%

CA-IR-142

Ref: HECO WP – 408, Page 1.

Please provide information for the 2004 calendar year for the calculation of the historical net heat rate as shown on WP-408.

HECO Response:

The corresponding data for 2004 is as follows:

1.	Total Fuel Consumed (MBtu)	
2.	Steam	51,453,940.2
3.	Diesel	785,235.4
4.	Total	52,239,175.5
5.	Total Energy Generated (MWh)	
6.	Steam	4,881,864.30
7.	Diesel	36,819.33
8.	Total	4,918,683.63
9.	Heat Rate (Btu/kWh)	
10.	Steam	10,540
11.	Diesel	21,327
12.	Total	10,621

CA-IR-143

Ref: HECO WP – 409, Page 9, Fuel Oil Inventory Study, Appendix B, Page 62 & 63.

HECO indicates that a 5-day period for fuel required for a continuous operation at each of the power plants. Please provide copies of all studies, reports, analyses, and workpapers that support the 5-day period.

HECO Response:

Please see workpaper HECO-WP-409, Appendix B, pages 62 through 63, that discusses the Receiving and Testing Fuel Oil process. This appendix explains the 5-day period for fuel requirements for a continuous operation at each of the power plants.

CA-IR-144

Ref: HECO WP – 409, Fuel Oil Inventory Study, Page 23.

Please provide a copy of all studies, reports, analyses and workpapers that support a 14-day arrangement for an "unscheduled" tanker.

HECO Response:

The period of time in advance of loading required to charter a suitable oil tanker for the importation of LSFO or its constituents from a port in the Western Pacific is based upon the maritime knowledge and tanker chartering experience of Jeffrey C. Aicken, Director Fuel Resources, Hawaiian Electric Co., Inc. See HECO-200, Docket No. 7951, for a list of his experience and educational background.

CA-IR-145

Ref: HECO WP - 410.

Please provide complete copies of all studies, analyses, workpapers, calculations and other information used to determine the amounts set forth in WP-410 for fuel related expenses, to the extent not included in your response to the immediately preceding two IRs.

HECO Response:

The amounts set forth in the revised HECO-WP-410, for which see HECO's response to CA-IR-132, for fuel related expense were determined on the basis of information contained in analyses, workpapers and computations described, referenced and supplied in conjunction with the responses to the pertinent IR.

CA-IR-146

Ref: HECO-410, HECO-411 and HECO 414 Fuel Inventory.

Please provide the monthly fuel inventory quantity and dollar balances by station and fuel type for each month of 2002, 2003 and 2004 to-date, in electronic spreadsheet form and in hard copy.

HECO Response:

Monthly fuel inventory volumes by station and fuel type by month for years 2002, 2003 and 2004 are shown in the table on page 2 of this response.

Fuel dollar balances are not maintained by station inasmuch as the major part of LSFO supplied to the HECO system is received at Barbers Point Tank Farm and thereafter transferred to the generating station fuel storage locations. However, at the station level, individual cost buckets are maintained for pipeline throughput dollars. System LSFO inventory dollars, pipeline throughput dollars on LSFO shipments by station and system diesel inventory dollars by month for 2002, 2003 and 2004 are shown in the table on page 3 of this response..

Hawaiian Electric Company, Inc.

FUEL INVENTORY BY LOCATION BY TYPE

	LOW SULFUR FUEL OIL				DIESEL
At End Of Month	(1) BPTF (in barrels)	(2) Kahe Plant (in barrels)	(3) Waiau Plant (in barrels)	(4) Iwilei/ Honolulu Plant (in barrels)	Waiau Plant (in barrels)
January-02	184,861	287,892	104,856	38,015	33,595
February-02	168,062	304,881	145,652	55,006	32,584
March-02	316,295	282,194	132,010	35,899	30,903
April-02	180,980	232,655	131,758	47,967	29,283
May-02	266,316	267,222	97,761	30,460	27,622
June-02	193,938	260,774	107,576	31,007	29,733
July-02	261,428	284,239	109,399	28,406	27,541
August-02	308,019	301,475	127,005	27,324	20,498
September-02	270,831	319,058	146,914	35,506	16,336
October-02	304,521	289,294	150,472	39,960	13,911
November-02	292,493	307,360	150,588	55,599	10,661
December-02	256,263	303,860	147,174	47,081	15,452
January-03	118,686	319,218	104,155	43,381	22,122
February-03	379,109	343,442	109,540	38,287	21,237
March-03	384,288	297,988	90,560	53,157	14,720
April-03	456,621	312,675	104,547	40,296	15,937
May-03	428,904	328,432	110,679	65,663	19,070
June-03	397,551	261,113	113,680	59,131	24,457
July-03	278,766	226,275	111,883	45,113	31,120
August-03	219,909	248,852	120,626	58,028	35,920
September-03	422,281	252,402	95,361	39,841	21,828
October-03	198,493	241,306	114,143	49,297	19,553
November-03	251,592	296,350	179,610	64,181	32,474
December-03	276,001	354,787	193,538	44,866	27,480
January-04	166,707	283,144	192,308	53,440	22,104
February-04	396,158	269,611	158,336	37,517	25,288
March-04	340,648	324,765	203,753	39,586	19,769
April-04	487,743	338,024	103,862	35,186	25,145
May-04	554,447	292,878	121,298	28,056	17,835
June-04	399,680	317,699	109,198	74,459	13,415
July-04	411,933	219,834	126,198	43,264	19,393
August-04	291,345	223,368	137,850	72,511	14,249
September-04	517,350	258,551	123,735	75,433	9,650
October-04	293,638	294,106	89,797	74,111	30,302
November-04	190,800	295,458	130,702	60,169	34,619
December-04	295,622	343,479	102,335	84,018	37,194

notes
(1) Includes volume of inbound deliveries from fuel suppliers in transit at cut off
(2) Includes volume of inbound deliveries direct from Chevron or BPTF in transit at cut off, including approximately 1,600 barrels Kahe pipeline fill.
(3) Includes volume of inbound deliveries from Chevron or BPTF in transit at cut off, including approximately 4,300 barrels fill in Barbers Pt. - Waiau segment of Chevron Black Oil pipeline except in December 04 when includes approximately 4,200 barrels fill of HECO Waiau pipeline
(4) Includes volumes of fuel in Iwilei fuel storage facility and Honolulu Plant fuel storage which are connected by dedicated pipeline; includes volumes of inbround deliveries from Chevron or BPTF to Iwilei fuel storage in transit at cut off, including approximately 4,200 barrels fill in Barbers Point - Waiau segment of Chevron Black Oil pipeline and approximately 3,400 barrels fill in the Waiau - Iwilei segment of the Chevron Black Oil pipeline; and includes approximately 800 barrels pipeline and/or tank fill of LSFO+diesel mix used to displace LSFO from the Iwilei-Honolulu pipeline.

Hawaiian Electric Company, Inc.

FUEL INVENTORY DOLLAR BALANCES BY TYPE

At End Of Month	System LSFO Inventory Balance	LSFO Inventory Throughput Balances Kahe Plant	Waiau Plant	Iwilei/ Honolulu Plant	System DIESEL Inventory Balance
January-02	$ 12,847,466.20	$19,787.33	$15,498.49	$19,996.35	$ 1,101,603.22
February-02	$ 14,471,551.10	$21,588.36	$21,040.98	$30,007.29	$ 1,070,360.82
March-02	$ 17,196,185.59	$19,460.36	$20,384.47	$20,881.10	$ 1,014,818.83
April-02	$ 14,755,401.88	$14,165.06	$16,729.72	$25,211.68	$ 961,399.56
May-02	$ 18,725,744.00	$16,288.18	$14,392.08	$15,392.24	$ 907,026.32
June-02	$ 16,886,146.23	$15,942.76	$13,938.93	$14,997.60	$ 972,183.96
July-02	$ 19,879,814.46	$16,802.78	$13,434.56	$12,294.01	$ 906,398.10
August-02	$ 22,738,722.49	$17,687.34	$17,021.79	$10,908.44	$ 675,761.02
September-02	$ 23,461,375.15	$19,046.01	$18,510.49	$15,205.05	$ 538,374.70
October-02	$ 25,183,766.01	$19,136.02	$19,362.90	$18,822.01	$ 458,203.20
November-02	$ 27,080,750.67	$19,968.42	$20,820.16	$27,364.06	$ 350,891.32
December-02	$ 25,085,195.04	$19,881.06	$19,995.83	$23,445.93	$ 552,701.34
January-03	$ 20,235,970.21	$21,089.19	$13,596.50	$21,541.61	$ 812,153.26
February-03	$ 31,315,893.92	$23,812.33	$16,876.33	$19,036.09	$ 784,058.15
March-03	$ 30,617,440.37	$18,705.42	$13,652.80	$26,582.05	$ 543,264.53
April-03	$ 34,131,380.13	$21,629.92	$17,367.18	$19,862.03	$ 648,964.59
May-03	$ 32,835,228.80	$22,856.05	$18,051.29	$32,725.08	$ 774,837.18
June-03	$ 28,547,674.20	$18,154.77	$18,717.28	$29,053.31	$ 942,477.78
July-03	$ 22,385,082.41	$19,426.03	$21,663.63	$22,126.57	$ 1,178,115.57
August-03	$ 21,845,106.89	$20,280.57	$23,597.48	$31,570.92	$ 1,360,810.83
September-03	$ 26,652,477.81	$20,286.56	$19,071.83	$21,571.43	$ 832,453.08
October-03	$ 19,555,420.75	$18,913.93	$20,566.63	$27,350.85	$ 752,554.69
November-03	$ 26,524,405.50	$23,552.09	$27,562.44	$36,784.39	$ 1,249,241.50
December-03	$ 30,913,042.35	$27,883.06	$34,180.03	$25,508.11	$ 1,059,333.17
January-04	$ 25,408,266.98	$22,906.64	$30,595.39	$31,458.97	$ 851,854.35
February-04	$ 30,066,771.79	$21,714.56	$27,652.02	$26,004.53	$ 1,021,669.93
March-04	$ 32,511,439.27	$26,156.46	$35,327.47	$29,512.83	$ 799,397.91
April-04	$ 36,069,902.50	$25,867.61	$18,104.10	$32,707.14	$ 1,115,443.55
May-04	$ 36,243,412.20	$22,378.04	$18,746.42	$ 9,691.55	$ 953,400.82
June-04	$ 33,494,559.40	$24,098.95	$18,652.07	$41,899.39	$ 819,119.03
July-04	$ 30,262,936.58	$17,783.29	$23,996.72	$27,073.68	$ 1,033,382.61
August-04	$ 28,306,049.12	$17,573.76	$25,616.37	$48,381.93	$ 836,121.11
September-04	$ 42,570,169.97	$20,810.13	$22,248.69	$47,870.45	$ 584,533.75
October-04	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

CA-IR-147

Ref: Exhibit 504, Page 1.

a. The referenced exhibit shows that the amount of purchased energy from Chevron increased from 302,435 annual kWh to 2,105,228 kWh in 2003. Please explain the reasons for the increase in purchased energy.

b. Please provide the actual amount of purchased energy from Chevron and Tesoro for 2004.

HECO Response:

a. In 2002, the amount of purchased energy was 302,435 kWh, and in 2003, the amount of purchased energy was 2,105,228 kWh. Chevron has three cogeneration units which produce electricity primarily for its internal refinery requirements, with the excess electricity being sold to HECO. The increase in 2003 was due to Chevron's refinery being on maintenance during the April to May 2003 time frame, resulting in less internal usage. During this time, the cogeneration units continued to operate, resulting in significantly more deliveries of electricity to HECO in April and May 2003, and consequently for all of 2003.

b. In 2004, HECO purchased 90,146 kWh from Chevron, and 3,677,119 kWh from Tesoro.

CA-IR-148

Ref: T-5, Page 4, Lines 1-3

Please provide complete copies of the analysis and all workpapers related to the derivation of the second order equations for AES and Kalaeloa.

HECO Response:

The information is voluminous. One copy (pages 2 to 72) will be provided to the Consumer Advocate and the Public Utilities Commission under separate transmittal.

CA-IR-149

Ref: T-5, Page 4, Lines 11 – 14.

Please provide a copy of the power dispatch schedules for H-Power for the test year period as modeled in the P-Month Production Simulation Model.

HECO Response:

Please see the response to CA-IR-124 where the hourly output file was submitted.

CA-IR-150

Ref: T-5, Page 5, Lines 5 – 8.

Please provide the specific dates for the maintenance schedule for H-Power as modeled in the P-Month Production Simulation Model.

HECO Response:

The maintenance schedule for H-POWER in the 2005 Planned Maintenance Schedule dated 1/12/04, was based on information provided by H-POWER as of 6/30/03. (See response to CA-IR-44, Attachment 1, pages 12-16.) The schedule for H-POWER has since been revised, as shown in Attachment 1 to this response. The revisions are reflected in the revised 2005 Planned Maintenance Schedule dated 2/3/05 (page 8 of the response to CA-IR-43) and in the new revised schedule to be filed as a supplement to CA-IR-43 (per page 2 of that response).

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-0001

CONT 9 H-POWER
IC/G
September 29, 2004

VIA FACSIMILE TRANSMISSION (682-5203) AND U. S. MAIL

Mr. Robert Webster
Facility Manager
Covanta Honolulu Resource Recovery Venture
91-174 Hanua Street
Kapolei, HI 96707

Dear Robert:

Subject: H-POWER Maintenance Schedule for Year 2005, Firm Capacity Amendment to Purchase Power Contract, Appendix B, Section 2(i)

HECO has reviewed CHRRV's proposed five-year, 2005-2009 maintenance schedule, in

system requirements, we were unable to approve your requested 2005 spring maintenance

2006-2009
At this time HECO withholds comments on the 2006-2009 maintenance schedule requests in CHRRV's June 29, 2004 submittal.

We appreciate CHRRV's practice of informing us in writing of all planned outages well in advance, and as soon as you are aware of the need for the outage, such as the 60-month schedule, or in alternative submittals. The reason for the 60-month submittal is to ensure that HECO has time to coordinate the proposed H-POWER outages with the outages of all other units, including Independent Power Producers, on the HECO system, to coordinate maintenance on the 138 kV transmission lines exporting power from the Campbell Industrial Park, and to ensure that adequate generation resources are scheduled to be available to provide an adequate block of time for each unit to be out of service for maintenance.

As done in the past, the time of day for the start of an outage should continue to be coordinated with Frank Vargo, HECO Operations Engineer, within two weeks of any scheduled outage. We greatly appreciate and thank you for your continuing cooperation.

Sincerely,

Daniel Ching
Director
Power Purchase Divison

cc: Frank Vargo, e-mail only
Dan Ching, e-mail only
Colin Jones, City & County of Honolulu, via Facsimile (808) 682-0715 and U.S. Mail

Bishop, Maurene

From: Vargo, Frank
Sent: Tuesday, November 16, 2004 2:57 PM
To: 'Webster,Robert'
Cc: Goo, Mathew; Bishop, Maurene; Vaughan, Jeffrey
Subject: RE: HPower: 2005 outage

I have entered this schedule in the Daily Generation Report. Looks like a go!

From: Webster,Robert [mailto:Robertt_Webster@CovantaEnergy.com]
Sent: Tuesday, November 16, 2004 1:29 PM
To: Bishop, Maurene
Cc: Goo, Mathew; Vargo, Frank
Subject: HPower: 2005 outage

Here it is ... -RW.

Maurene & Gents:
Good day. I had promised a reply to your letter of 9/29 upon completion of the Generator testing that we performed in October. Will this fit into HECO's plans?:

Both units off 4/14/05 (0001) thru 5/16/05 (0 mw output) *except for 23 mw from 4/14 @ 0001 to 4/15 @ 0001*

and 23 mw from 5/16 @ 0001 to 5/17 @ 0600
(46 mw output) as of 5/17/05 @ 0600

Our Generator will require rewind of the stator field, (the rotor was done in 2002) and is basically, a 4 week duration as noted above. I trust that this will cover the transmission (and/or substation) work that you folks had discussed and planned. Please review and advise.
Thank you very much,

Robert Webster
Fac.Mgr.-HPOWER
808-682-0201

CA-IR-151

Ref: T-5, Page 7, Lines 15 – 17.

a. Please provide the quarterly Schedule Q rates for 2005 test year.

b. Please provide the calculation of the 2005 test year schedule Q quarterly rates.

HECO Response:

a. The 2005 test year estimate of the Schedule Q rate is 6.96 cents per net kwh. The actual Schedule Q. rate for the first quarter of 2005 was filed with the Commission on December 30, 2004 and a copy was provided to the Consumer Advocate.

b. Refer to HECO-WP-1032 page 8 for the calculation of the 2005 test year estimate of the Schedule Q rate. The calculation of the actual Schedule Q rate for the first quarter was file with the Commission on December 30, 2004 and a copy was provided to the Consumer Advocate.

CA-IR-152

Ref: T-5 , Page 9, Lines 5 – 3.

For Kalaeloa, please provide a copy of Amendment No. 3 to the Purchase Power Agreement dated October 14, 1988.

HECO Response:

The original Kalaeloa PPA and the subsequent amendments thereto are being provided in response to CA-IR-1 in Docket No. 04-0320, the Kalaeloa PPA Amendment Nos. 5 and 6 proceeding. The original PPA and Amendments are voluminous and may be viewed in HECO's offices. Please call Irene Sekiya at 543-4778 to arrange for review at HECO's offices.

CA-IR-153

Ref: HECO Exhibit 403, Page 1.

Please provide the actual system losses for the years 2000 through 2004 and provide explanations of changes expected in the test year to derive the forecasted 4.7% loss factor, or any trends in losses to support the reasonableness of the 4.7% factor proposed for the test year.

HECO Response:

Please see the attached Excel spreadsheet for the calculation of the actual system losses for the years 2000 through 2004. Please see workpaper HECO-WP-2220 for an explanation of the losses.

Hawaiian Electric Company, Inc.

Historical System Losses
2000 - 2004

		kWh					
	Formula	2000	2001	2002	2003	2004	**5-year Total**
Gross HECO Generation	A	4769841300	4779134600	4931176700	4966953700	5227809500	24674915800
Plant Use	B	288796050	290624170	293270650	298011280	309125870	1479828020
Net HECO Generation	C	4481045250	4488510430	4637906050	4668942420	4918683630	23195087780
Purchased Energy	D	3108363332	3154777580	3119792621	3240014357	3208314423	15831262313
Subtotal Net Generation & Purchased Energy	E	7589408582	7643288010	7757698671	7908956777	8126998053	39026350093
Unaccounted for & Losses	F	362133502	351065870	351952785	371348087	378643641	1815143885
Company Use	G	15514884	15541140	15379093	15379093	15520824	77335034
Subtotal	H	377648386	366607010	367331878	386727180	394164465	1892478919
Total Recorded Sales	J	7211760196	7276681000	7390366793	7522229597	7732833588	37133871174
No Charge % of Sales	K = G / J	0.215%	0.214%	0.208%	0.204%	0.201%	0.208%
Loss % of Net-to-System	L = F / E	4.77%	4.59%	4.54%	4.70%	4.66%	4.65%
Loss & No Charge %	M = H / E	4.98%	4.80%	4.74%	4.89%	4.85%	4.85%
HECO Net Generation as a Percentage of Net Energy Generated and Purchased	N = C / E	59.04%	58.72%	59.78%	59.03%	60.52%	59.43%
HECO Variable O&M Factor	[1/(1-M)] x N	62.14%	61.68%	62.76%	62.07%	63.61%	62.46%

Source: Production, Purchased Power, and Accounting Reports

CA-IR-154

Ref: HECO WP – 404, Pages 6 – 8.

Please provide the actual heat content in Mbtu per barrel of low sulfur oil and diesel oil for the years 2000 through 2004 and provide explanations of any difference with heat content assumed in the test year.

HECO Response:

The referenced work papers (HECO-WP-404, pages 6 to 8), shows the per barrel btu content of LSFO and diesel consistent with the per unit prices of "Fuel Oil Prices Used For Filing" and "Diesel Oil Prices Used For Filing" in cents per Mbtu shown in HECO's Energy Cost Adjustment filing with the PUC for each month of 2003. These fuel heat content values not only reflect the average gross heat or Btu content of the Company's fuel purchases by type but were also the values used to determine the generating unit commitment order for economic dispatch. Monthly values for each fuel type's heat content for the other requested years, 2000, 2001, 2002 and 2004, determined on the same basis of computation as were the values for 2003 in the referenced work paper, are provided in the table on page 3 of this response.

Differences between monthly average heat content in the 2003 calibration data and that

and 6.2684 million btu per barrel for December, 63,700 Btu per barrel, is only marginally greater than the stated reproducibility error limit.

A second source of variability is the fact that the primary qualitative determinants of gross heat content are the measured density (expressed in units of API gravity, a reciprocal of specific gravity) and measured sulfur content (expressed in weight percent). The oil supplied in a given delivery may fall within a range of values for both API gravity and sulfur content and be assessed as within specification limits quality. Where the fuel does precisely fall within such value ranges reflects the oil suppliers' confidential economic decisions regarding such considerations as refinery processing unit operations, crude oil selection and choice of blending components, for example, about which HECO possesses neither detailed knowledge nor contractual rights of influence.

Hawaiian Electric Company, Inc.

MBTU PER BARREL FOR GENERATING UNIT DISPATCH

Unit	LSFO System Heat Content	DIESEL System Heat Content
January-00	6.2435	5.7935
February-00	6.2634	5.7954
March-00	6.2723	5.7968
April-00	6.2672	5.7978
May-00	6.2543	5.8005
June-00	6.2666	5.7927
July-00	6.2618	5.7957
August-00	6.2535	5.7958
September-00	6.2592	5.7957
October-00	6.2700	5.7943
November-00	6.2586	5.7677
December-00	6.2550	5.7649
January-01	6.2552	5.7620
February-01	6.2511	5.7556
March-01	6.2517	5.7899
April-01	6.2564	5.7639
May-01	6.2977	5.7750
June-01	6.2792	5.5841
July-01	6.3079	5.7776
August-01	6.2497	5.7798
September-01	6.2345	5.7822
October-01	6.2618	5.7816
November-01	6.2573	5.7839
December-01	6.2696	5.7877
January-02	6.3166	5.7947
February-02	6.3264	5.8008
March-02	6.3166	5.8001
April-02	6.2476	5.7991
May-02	6.3339	5.7973
June-02	6.3040	5.7960
July-02	6.2925	5.8071
August-02	6.3112	5.7949
September-02	6.2976	5.7968
October-02	6.2602	5.8060
November-02	6.2745	5.8040
December-02	6.2991	5.8007
January-04	6.2713	5.8160
February-04	6.2744	5.8204
March-04	6.2594	5.8062
April-04	6.2953	5.7932
May-04	6.3370	5.7927
June-04	6.2885	5.7840
July-04	6.2817	5.8038
August-04	6.2763	5.7889
September-04	6.3351	5.8179
October-04	6.3180	5.7602
November-04	6.3039	5.7759
December-04	6.2821	5.7720

CA-IR-155

Ref: HECO T-2, Page 7.

Please identify, explain and quantify each of the "incremental changes to the February 2004 forecast" that was incorporated into the rate case test year sales forecast.

HECO Response:

The differences between the February 2004 forecast and the June 2004 sales update are quantified on Page 19 of HECO-WP-201. The June 2004 sales update lowered the February 2004 sales forecast projected 2005 residential and commercial sales by 15 GWh and 59 GWh, respectively.

The June 2004 sales update lowered the residential sales test year estimate by 15 GWh because April year-to-date ("YTD") 2004 recorded sales were 0.9% or 6 GWh below the February 2004 forecast. The changes made to the residential sector in the June 2004 update included enhanced DSM program impacts, lower projected number of customers, and lower estimated average use per customer, offset by Bill 53 energy code impacts.

1. Enhanced DSM program impacts lowered sales estimates by 9 GWh.
2. The average number of customers was lowered by 684 from 254,758 to 254,074 because the actual number of customers April 2004 YTD was lower than the February 2004 customer forecast. The February 2004 forecast average number of customers' growth was too optimistic with 3,217 additional customers in 2004 and 3,200 in 2005. April YTD 2004 growth averaged 2,600 customers over 2003. In order to achieve the February 2004 forecast average number of customers of 254,758, the monthly increase would have to average almost 4,000 customers per month over the remaining eight months of 2004. The June 2004 update lowered the average increase to 2,700 for 2004

and 3,000 for 2005. This change also took into consideration recent housing permits activity (see HECO's response to CA-IR-158), the effects of the cement strike on 1st quarter 2004 construction, and the apparent inability of developers to keep up with demand. The lower average number of customers decreased the estimated June 2004 sales update sales by 7 GWh in 2005.

3. The average use per customer was lowered in the June 2004 update because the April YTD 2004 use per customer was 0.3% below the February 2004 forecast. The June update lowered the annual use per customer from 8,290 kWh to 8,278 kWh in 2004. The growth for 2005 remained at 1.3% over 2004, but because the 2004 base was lower, the 2005 annual use per customer decreased by 12 kWh to 8,386 kWh per year in the June 2004 update. This resulted in a decrease of 2 GWh in the test year estimate.
4. The June 2004 update inadvertently omitted the Bill 53 energy code impacts on residential sales thereby increasing the February 2004 forecast by 4 GWH.

The commercial sales estimate was lowered by 59 GWh because the weather normalized recorded sales for the 1st quarter of 2004 was 16 GWh lower than the February 2004 forecast. Changes made in the June 2004 update included enhanced DSM program impacts, updated sector analysis, and revised impacts from CHP assumptions.

1. Enhanced DSM program impacts lowered sales estimates by 5 GWh.
2. The updated sector analysis resulted in the following major changes to test year estimates:
   - The office sector was lowered by 23 GWh because of lower growth rates experienced in the 1st quarter of 2004 (-10 GWh), lower 2004 estimates used as a base for 2005 growth (-9 GWh), and lower estimated use for the Abner Paki

courthouse (-3 GWh).

- The services & amusement sector was lowered by 16 GWh because of lower growth rates experienced in the 1st quarter of 2004 (-6 GWh), and lower 2004 estimates used as a base for 2005 growth (-10 GWh).
- The pumping sector was reduced by 7 GWh because of project delays from an August 2005 to a February 2007 estimated start for Phase II of the Sand Island wastewater treatment plant.
- The manufacturing sector was lowered by 5 GWh because of lower growth rates experienced in the 1st quarter of 2004 (-2 GWh), and lower 2004 estimates used as a base for 2005 growth (-3 GWh).
- Smaller changes in the remaining sectors decreased the June 2004 sales update estimates for 2005 by 6 GWh. Major military project changes were shown on page 20 of HECO-WP-201.

3. Revised combined heat and power program impacts and revisions to the economic

CA-IR-156

Ref: HECO T-2, Page 11, Line 11 and HECO-203.

According to the testimony, "[t]he estimate of total commercial sales was based on sector analysis."

a. Please provide a complete copy of this "sector analysis," as well as all available updates to such "analysis" that have been prepared by, or for HECO.

b. Please provide data files on diskette. Included in the data files, please include detailed historical data shown in Appendix O, page 27 to 28 and commercial allocation of sectors in Appendix J of February 2004 forecast voluminous document and any updates.

c. For each of the large housing projects, please identify if the project is master metered.

d. If available, provide the number of housing units for each of the large housing projects.

HECO Response:

a. A copy of the sector analysis workpapers for the June 2004 sales update is provided in pages 3 – 52 of HECO's response to CA-IR-156. Note that confidential customer information has been deleted. See also HECO's response to CA-IR-24 (b).

b. HECO objects to providing the workpapers shown on pages 3 – 52 of HECO's response to CA-IR-156 in electronic format on the grounds that: (1) such documents contain customer-specific, customer-sensitive, and privileged information, and (2) the disclosure of such information has not been consented to by the customers. The hardcopies provided have deleted the customer specific information.

The data files shown on pages 27 – 28 of Appendix O and in Appendix J of the February 2004 forecast voluminous documents are provided electronically in MS Excel

metered projects in the forecast. When final details are available for projects that indicate the units will be individually metered, the forecasted common area use will remain in the housing commercial sector while individual units' usage will be included in the residential forecast.

d. The following table provides the projected number of units available for the large housing projects included in the June 2004 sales update:

Name	# of Units
Windsor (Hobron) conversion	181
Lanikea at Waikiki (A&B)	100
Kahala Nui Sr Living	270
Hokua Condo	365
Luana Koa at Kapolei	247
Koolani	372
Kulana Hale II	106
Moana Pacific	706
Emerald Tower	230

Due to the voluminous nature of the information, one copy (pages 3 – 52) will be provided to the Consumer Advocate and the Public Utilities Commission under separate transmittal.

CA-IR-157

Ref: HECO T-2, Page 11, Line 11, HECO-203 and Test Year Sales Forecast Workpapers.

According to the testimony, "[t]he estimate of total commercial sales was based on sector analysis." Please provide the following information:

a. monthly actual sales volumes for each "sector" for the period January 2003 through December 2004;

b. monthly weather-normalized sales volumes for each "sector" for the period January 2003 through December 2004;

c. the most current available "Large Projects" update comparable to the information reflected on workpapers 34-35, which contain the "LARGE PROJECTS, May 2004 Sales Update;"

d. explanations for any apparent trends or observable aberrations in the data provided in response to subparts (a),(b) and (c) of this information request, indicating how such data is thought to be supportive of HECO's projected test year 2005 sales volumes to each "sector;" and

e. identify and quantify each known change to the commercial forecasted sales for the test year, given your responses to subparts (a) through (d) above.

HECO Response:

a. The monthly billed sales by sector for January 2003 through December 2004 are shown on the top half of pages 5 – 6 of HECO's response to CA-IR-157. The file will be provided in electronic format on a CD labeled CA-IR-157 under separate transmittal. Note: The sum of the monthly data may differ slightly from the total year data shown in HECO's response to CA-IR-156 for several reasons, including: (1) some of the billing adjustments made to an extract for a particular month may have been estimates while the adjustments made to the year-to-date extract is usually the final billed amount, and (2) some accounts may change sector codes during the year (the data for the entire year related to the account will be reflected in the current sector in the year-to-date extract). Generally, HECO uses annual or quarterly data rather than monthly in analyzing the business sectors during the forecast

process.

b. The monthly weather normalized billed sales by sector for January 2003 through December 2004 are shown on the bottom half of pages 5 – 6 of HECO's response to CA-IR-157.

c. Pages 36 – 37 of HECO-WP-201 is from the June 2004 sales update, the most recent update approved by HECO's executive staff.

d. Aberrations in the business sector data occurred in the education, manufacturing, pumping, and food processing areas in 2004. The following is a discussion on each of these sectors:

1. Education – The growth in the education sector fell to 0.8% after growing close to 5% in previous years. Reasons for this slowdown include lower use at UH Manoa in November and December 2004 due to flood damage, and no major school or facilities openings occurred in 2004 (three smaller schools – Nanaikapono, Mililani Ike, and Island Pacific Academy - did start as anticipated in 2004). The test year estimates include an even greater rate of growth in 2005 than seen in the past. This is primarily due to the new UH medical school, which was expected to begin adding significant load at the end of 2004 but that did not materialize. The school remains on schedule, however, and load is expected to pick up as the buildings are occupied in the first quarter of 2005. While the drop in usage at UH Manoa was not anticipated, the use is expected to pick up again in 2005 as facilities are repaired.

2. Manufacturing – The growth in the manufacturing sector jumped 15.3% in 2004 as compared to a 1.6% drop in 2003. A large increase was anticipated in the June 2004 sales update, and the growth is expected to continue into the test year. The resumption of operations at Air Liquide, the new Kapolei Honolulu Advertiser plant, offset by the shutdown of the presses at the Kapiolani plant, and high use at Tesoro were all major

factors in the jump in 2004. The load changes at Air Liquide and the Honolulu Advertiser were all anticipated and included in the June update. Tesoro's use was higher than expected, but their use is very sporadic and generally tied to maintenance on their co-gen. The test year expects growth in the sector to continue to be healthy with a 4.9% increase, due mostly to the strong local economy, with increased loads from Air Liquide and the Honolulu Advertiser.

3. Pumping – This sector dropped by 6.4% in 2004 rather than growing by 5.9% as anticipated. The Sand Island wastewater treatment plant upgrades are behind schedule and increased usage was not seen in the 4th quarter of 2004 as anticipated. This project must be completed to comply with Environmental Protection Agency regulations, and the test year includes additional load increases. Pumping loads also dropped because of higher than 2003 and 30-year average rainfall levels and maintenance work. The test year assumes more normal rainfall levels, less maintenance, and increasing loads in keeping with the growth in the residential real estate market.

4. Food Processing – This sector has dropped for several years, mainly due to lower visitor arrivals levels impacting restaurants and hotels catering to visitors. In addition, several companies have closed facilities, including Meadow Gold, Del Monte, Holsum, and Foremost. These facility closures were included in the June update, except for Foremost, which occurred suddenly in the 3rd quarter of 2004. The test year assumes a resumption of growth as visitor arrivals improve and the economy in general strengthens.

e. The re-evaluation of HECO's commercial sales projections is a complicated and time consuming process that is undertaken periodically, usually as part of an annual sales forecast

or sales update effort. HECO is currently preparing its annual sales and peak forecast and will be re-evaluating all of the test year commercial sales estimates as part of the forecasting efforts. Based on the information in part (d) of CA-IR-157, it appears that the education sector may decrease by at least 7 - 8 GWh in the test year, the manufacturing sales may increase by about 6 GWH, the pumping sector may be lowered because of project delays at Sand Island Wastewater Treatment Plant (the amount is not quantifiable at this time), and the food processing sector may decrease by 3 – 4 GWh. Other changes in the sector may increase or offset the impacts identified in this response.

Hawaiian Electric Company, Inc.

BILLED GWHS BY BUILDING TYPE
Including Billing Adjustments
2003

Building Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Offices	61.7	61.9	62.2	63.9	63.8	68.3	66.4	70.3	69.7	70.1	67.3	63.4	789.0
Restaurant	19.4	18.8	19.0	19.4	19.5	21.7	20.8	21.8	22.0	21.3	20.9	19.3	243.9
Retail (Non Food)	38.6	36.4	37.6	37.8	37.8	41.5	40.5	41.9	42.5	41.4	40.5	39.4	475.9
Grocery (Retail - Food)	16.6	15.9	16.3	16.2	16.5	17.4	17.2	17.6	18.1	17.6	17.2	16.8	203.4
Warehouse	10.0	9.6	9.7	10.0	10.1	10.8	10.6	11.1	11.2	11.1	10.7	10.5	125.4
Education	28.1	29.6	30.9	31.0	31.8	31.5	29.7	31.5	35.7	35.3	34.2	32.1	381.4
Health	17.1	17.1	17.1	17.7	17.5	18.7	18.6	19.9	19.4	19.6	18.8	18.2	219.7
Lodging (Hotels)	34.5	31.1	32.3	33.9	31.5	33.9	37.1	37.5	37.9	37.5	34.9	34.1	416.2
Housing (Apt/Condo)	36.0	35.0	34.6	34.8	34.2	37.6	36.3	38.9	38.6	38.4	37.8	34.8	437.0
Service/Amusement	28.5	28.6	29.3	29.6	29.6	32.0	31.9	33.2	33.5	32.6	32.0	30.6	371.4
Air Facilities	9.6	8.7	10.2	9.3	9.3	10.4	10.3	9.5	11.4	10.0	10.0	10.9	119.6
Manufacturing	7.7	8.6	8.1	8.3	7.5	9.0	9.9	9.2	9.0	8.8	8.8	8.9	103.8
Pumping (incl BWS)	16.7	16.0	16.1	15.6	16.3	18.8	17.8	18.8	19.1	17.6	17.5	15.8	206.1
Military/Base	93.2	80.8	95.6	87.9	91.6	101.3	99.1	100.4	112.9	101.9	101.1	103.1	1,168.9
Food Processing	6.2	6.3	6.5	6.5	6.2	6.5	6.4	6.7	6.4	6.3	6.0	5.9	75.9
Others	6.0	7.3	6.8	6.9	6.3	7.2	6.9	7.5	7.0	7.1	7.1	6.5	82.6
Grand Total	429.9	411.7	432.3	428.8	429.5	466.6	459.5	475.8	494.4	476.6	464.8	450.3	5,420.2
CDD	240	250	338	373	439	471	545	576	518	504	420	336	5010
1976 - 2004 Average	260	240	307	343	406	461	507	533	507	480	387	313	4744
CDD Diff from Avg	-20	10	31	30	33	10	38	43	11	24	33	23	266
Weather Impact *	-4	2	6.2	6	6.6	2	7.6	8.6	2.2	4.8	6.6	4.6	53.2

BILLED GWHS BY BUILDING TYPE
Weather Normalized
2003

Building Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Offices	62.3	61.6	61.3	63.0	62.8	68.0	65.3	69.0	69.4	69.4	66.3	62.8	781.2
Restaurant	19.6	18.7	18.7	19.1	19.2	21.6	20.5	21.4	21.9	21.1	20.6	19.1	241.5
Retail (Non Food)	39.0	36.2	37.1	37.3	37.2	41.3	39.8	41.1	42.3	41.0	39.9	39.0	471.2
Grocery (Retail - Food)	16.8	15.8	16.1	16.0	16.2	17.3	16.9	17.3	18.0	17.4	17.0	16.6	201.4
Warehouse	10.1	9.6	9.6	9.9	9.9	10.8	10.4	10.9	11.2	11.0	10.5	10.4	124.2
Education	28.4	29.5	30.5	30.6	31.3	31.4	29.2	30.9	35.5	34.9	33.7	31.8	377.6
Health	17.3	17.0	16.9	17.5	17.2	18.6	18.3	19.5	19.3	19.4	18.5	18.0	217.5
Lodging (Hotels)	34.8	30.9	31.8	33.4	31.0	33.8	36.5	36.8	37.7	37.1	34.4	33.8	412.1
Housing (Apt/Condo)	36.3	34.8	34.1	34.3	33.7	37.4	35.7	38.2	38.4	38.0	37.3	34.4	432.7
Service/Amusement	28.8	28.5	28.9	29.2	29.1	31.9	31.4	32.6	33.4	32.3	31.5	30.3	367.7
Air Facilities	9.7	8.7	10.1	9.2	9.2	10.4	10.1	9.3	11.3	9.9	9.9	10.8	118.4
Manufacturing	7.8	8.6	8.0	8.2	7.4	9.0	9.7	9.0	9.0	8.7	8.7	8.8	102.8
Pumping (incl BWS)	16.9	15.9	15.9	15.4	16.0	18.7	17.5	18.5	19.0	17.4	17.3	15.6	204.1
Military/Base	94.1	80.4	94.2	86.7	90.2	100.9	97.5	98.6	112.4	100.9	99.7	102.0	1,157.5
Food Processing	6.3	6.3	6.4	6.4	6.1	6.5	6.3	6.6	6.4	6.2	5.9	5.8	75.2
Others	6.1	7.3	6.7	6.8	6.2	7.2	6.8	7.4	7.0	7.0	7.0	6.4	81.8
Grand Total	433.9	409.7	426.1	422.8	422.9	464.6	451.9	467.2	492.2	471.8	458.2	445.7	5,367.0

* 2003 impact of 0.2007 GWh per CDD difference from average

CA-IR-158

Ref: HECO T-2, Page 11, Line 14.

According to the testimony, "[t]he test year customer forecast for Schedule R was based on a market analysis of the housing real estate market." Please provide the following:

a. a complete copy of this "market analysis;"

b. all available updates to such "market analysis" that have been prepared by, or for HECO; and

c. an explanation as to how the Company derived the 2,700 and 3,000 customer count addition estimates for 2004 and 2005, respectively (excluding the Kukui Gardens conversions) from such data.

HECO Response:

a. The market analysis is based on trends in housing permit data in the F.W. Dodge report from

[redacted]

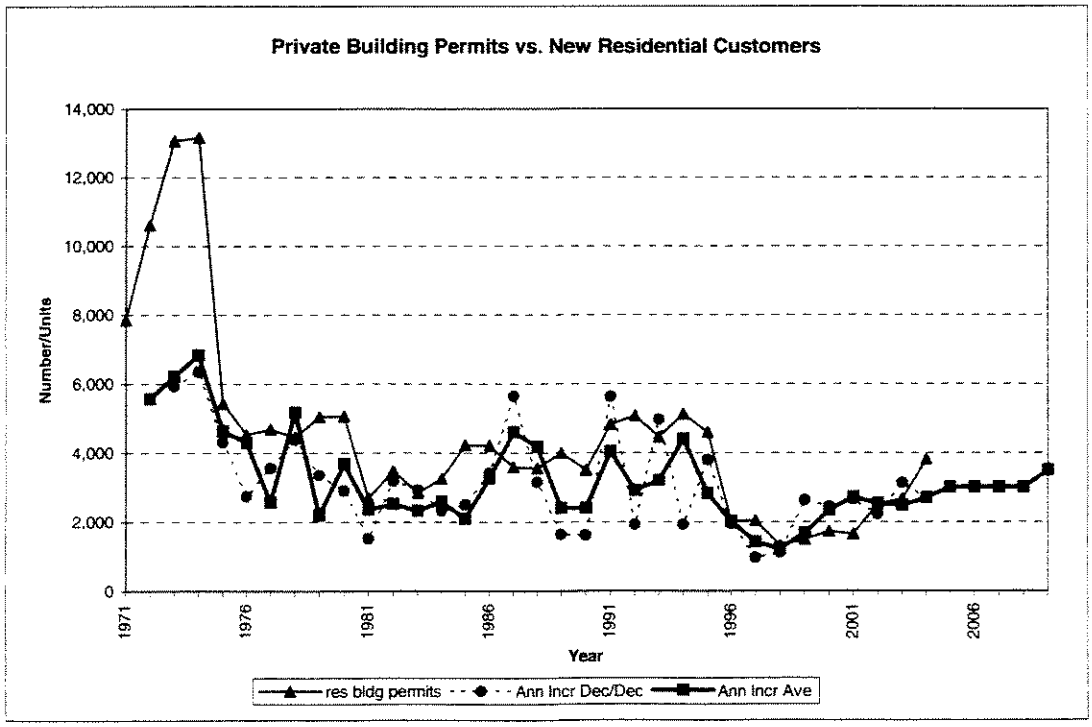
2,483, respectively.

3. Year-to-date April 2004 average growth in residential customers over the same period in 2003 of 2,628 (April year-to-date data is shown on page 10 of the voluminous workpapers for the June 2004 sales update).

The Company's estimate of 3,000 customer additions for 2005 was based on the 2004 projection of 2,700 customer additions, as well as expectations that 2005 would show a higher number of additions as developers build homes in response to the high demand that began in 2003.

	Honolulu C&C Pvt Bldg Permits				HECO Res Cust Ct.		Increase in			
	SF	MF	Total		Yr - End	Average	Yr - End	Average		
1970										
1971	**3,771**	**4,087**	**7,858**			**147,621**				
1972	**3,352**	**7,265**	**10,617**		**156,249**	**153,179**		**5,558**		
1973	**3,008**	**10,057**	**13,065**		**162,180**	**159,389**	**5,931**	**6,210**		
1974	**1,626**	**11,534**	**13,160**		**168,525**	**166,226**	**6,345**	**6,837**		
1975	**1,078**	**4,352**	**5,430**		**172,839**	**170,853**	**4,314**	**4,627**		
1976	**1,326**	**3,198**	**4,524**		**175,581**	**175,157**	**2,742**	**4,304**		
1977	**2,210**	**2,473**	**4,683**		**179,139**	**177,722**	**3,558**	**2,565**		
1978	**2,075**	**2,371**	**4,446**		**183,519**	**182,887**	**4,380**	**5,165**		
1979	**3,046**	**1,988**	**5,034**		**186,875**	**185,080**	**3,356**	**2,193**		
1980	**1,650**	**3,411**	**5,061**		**189,771**	**188,761**	**2,896**	**3,681**		
1981	**768**	**1,915**	**2,683**		**191,283**	**191,112**	**1,512**	**2,351**		
1982	**891**	**2,585**	**3,476**		**194,468**	**193,627**	**3,185**	**2,515**		
1983	**1,562**	**1,280**	**2,842**		**197,400**	**195,952**	**2,932**	**2,325**		
1984	**2,199**	**1,054**	**3,253**		**199,722**	**198,542**	**2,322**	**2,590**		
1985	**2,313**	**1,905**	**4,218**		**202,222**	**200,638**	**2,500**	**2,096**		
1986	**2,024**	**2,188**	**4,212**		**205,636**	**203,903**	**3,414**	**3,265**		
1987	**2,684**	**905**	**3,589**		**211,277**	**208,501**	**5,641**	**4,598**		
1988	**2,001**	**1,549**	**3,550**		**214,429**	**212,675**	**3,152**	**4,174**		
1989	**2,026**	**1,974**	**4,000**		**216,063**	**215,076**	**1,634**	**2,401**		
1990	**2,050**	**1,458**	**3,508**		**217,681**	**217,471**	**1,618**	**2,395**		
1991	**1,303**	**3,517**	**4,820**		**223,304**	**221,505**	**5,623**	**4,034**		
1992	**2,269**	**2,809**	**5,078**		**225,229**	**224,418**	**1,925**	**2,913**		
1993	**2,180**	**2,274**	**4,454**		**230,192**	**227,616**	**4,963**	**3,198**		
1994	**2,769**	**2,356**	**5,125**		**232,115**	**232,010**	**1,923**	**4,394**		
1995	**2,130**	**2,458**	**4,588**		**235,905**	**234,832**	**3,790**	**2,822**		
1996	**1,183**	**841**	**2,024**		**237,860**	**236,849**	**1,955**	**2,017**		
1997	**1,188**	**856**	**2,044**	1%	**238,825**	**238,269**	**965**	**1,420**		
1998	**1,279**	**38**	**1,317**	-36%	**239,945**	**239,487**	**1,120**	**1,218**		
1999	**1,446**	**48**	**1,494**	13%	**242,579**	**241,167**	**2,634**	**1,680**		
2000	**1,685**	**46**	**1,731**	16%	**245,027**	**243,512**	**2,448**	**2,345**		
2001	**1,650**	**0**	**1,650**	-5%	**247,672**	**246,225**	**2,645**	**2,713**		5-yr avg
2002	**1,940**	**581**	**2,521**	53%	**249,896**	**248,765**	**2,224**	**2,540**	1.0%	2,099
2003	**2,419**	**253**	**2,672**	6%	**253,033**	**251,248**	**3,137**	**2,483**	1.0%	2,352
2004	**1,849**	**1,962**	**3,811**	43%	255,733	253,948	2,700	2,700	1.1%	2,556
2005					258,733	256,948	3,000	3,000	1.2%	2,687
2006					261,733	259,948	3,000	3,000	1.2%	2,745
2007					264,733	262,948	3,000	3,000	1.1%	2,837
2008					267,733	265,948	3,000	3,000	1.1%	2,940
2009					271,233	269,448	3,500	3,500	1.3%	3,100

bold = actual



		Honolulu C&C Increm Pvt Bldg Permits			Honolulu C&C Cumul Pvt Bldg Permits		
		SF	MF	Total	SF	MF	Total
1995	jan	126	282	408	126	282	408
	feb	139	723	862	265	1,005	1,270
	mar	66	245	311	331	1,250	1,581
	apr	63	155	218	394	1,405	1,799
	may	120	14	134	514	1,419	1,933
	jun	456	115	571	970	1,534	2,504
	jul	368	326	694	1,338	1,860	3,198
	aug	99	4	103	1,437	1,864	3,301
	sep	339	444	783	1,776	2,308	4,084
	oct	203	0	203	1,979	2,308	4,287
	nov	117	4	121	2,096	2,312	4,408
	dec	80	78	158	2,176	2,390	4,566
1996	jan	50	86	136	50	86	136
	feb	130	74	204	180	160	340
	mar	192	0	192	372	160	532
	apr	85	0	85	457	160	617
	may	68	0	68	525	160	685
	jun	51	56	107	576	216	792
	jul	85	360	445	661	576	1,237
	aug	222	0	222	883	576	1,459
	sep	137	81	218	1,020	657	1,677
	oct	57	0	57	1,077	657	1,734
	nov	60	184	244	1,137	841	1,978
	dec	46	0	46	1,183	841	2,024
1997	jan	29	0	29	29	0	29
	feb	35	32	67	64	32	96
	mar	99	0	99	163	32	195
	apr	135	0	135	298	32	330
	may	105	430	535	403	462	865
	jun	123	187	310	526	649	1175
	jul	171	39	210	697	688	1385
	aug	125	40	165	822	728	1550
	sep	133	24	157	955	752	1707
	oct	104	4	108	1059	756	1815
	nov	81	84	165	1140	840	1980
	dec	48	16	64	1188	856	2044
1998	jan	90	0	90	90	0	90
	feb	110	1	111	200	1	201
	mar	110	7	117	310	8	318
	apr	97	0	97	407	8	415
	may	136	4	140	543	12	555
	jun	82	0	82	625	12	637
	jul	145	0	145	770	12	782
	aug	105	0	105	875	12	887
	sep	100	18	118	975	30	1005
	oct	100	8	108	1075	38	1113
	nov	91	0	91	1166	38	1204
	dec	113	0	113	1279	38	1317

		Honolulu C&C Increm Pvt Bldg Permits			Honolulu C&C Cumul Pvt Bldg Permits		
		SF	MF	Total	SF	MF	Total
1999	jan	107	11	118	107	11	118
	feb	94	0	94	201	11	212
	mar	165	1	166	366	12	378
	apr	88	0	88	454	12	466
	may	185	0	185	639	12	651
	jun	101	6	107	740	18	758
	jul	48	0	48	788	18	806
	aug	194	8	202	982	26	1008
	sep	50	0	50	1032	26	1058
	oct	171	2	173	1203	28	1231
	nov	119	12	131	1322	40	1362
	dec	124	8	132	1446	48	1494
2000	jan	98	0	98	98	0	98
	feb	67	0	67	165	0	165
	mar	187	0	187	352	0	352
	apr	74	0	74	426	0	426
	may	215	0	215	641	0	641
	jun	180	0	180	821	0	821
	jul	95	0	95	916	0	916
	aug	203	0	203	1119	0	1119
	sep	84	0	84	1203	0	1203
	oct	147	0	147	1350	0	1350
	nov	138	46	184	1488	46	1534
	dec	197	0	197	1685	46	1731
2001	jan	103	0	103	103	0	103
	feb	162	0	162	265	0	265
	mar	178	0	178	443	0	443
	apr	159	0	159	602	0	602
	may	241	0	241	843	0	843
	jun	83	0	83	926	0	926
	jul	122	0	122	1048	0	1048
	aug	115	0	115	1163	0	1163
	sep	162	0	162	1325	0	1325
	oct	124	0	124	1449	0	1449
	nov	140	0	140	1589	0	1589
	dec	61	0	61	1650	0	1650
2002	jan	108	0	108	108	0	108
	feb	107	0	107	215	0	215
	mar	81	0	81	296	0	296
	apr	251	0	251	547	0	547
	may	163	0	163	710	0	710
	jun	121	16	137	831	16	847
	jul	115	0	115	946	16	962
	aug	204	125	329	1150	141	1291
	sep	249	114	363	1399	255	1654
	oct	272	87	359	1671	342	2013
	nov	120	108	228	1791	450	2241
	dec	149	131	280	1940	581	2521

Source: DBEDT Dodge reports

		Honolulu C&C Increm Pvt Bldg Permits			Honolulu C&C Cumul Pvt Bldg Permits		
		SF	MF	Total	SF	MF	Total
2003	jan	177	8	185	177	8	185
	feb	222	0	222	399	8	407
	mar	172	103	275	571	111	682
	apr	179	0	179	750	111	861
	may	149	0	149	899	111	1010
	jun	401	55	456	1300	166	1466
	jul	181	12	193	1481	178	1659
	aug	216	45	261	1697	223	1920
	sep	122	0	122	1819	223	2042

CA-IR-159

Ref: HECO T-2, Page 20 and HECO-WP-201, Page 34.

a. Based on actual 2004 residential customers, kwh sales, and resultant average use, please explain the reasons for the deviations from HECO's 2004 residential forecast.

b. Please comment on the reasonableness of HECO's test year average residential use based on the 2004 actual residential use.

HECO Response:

a. HECO's 2004 weather normalized recorded residential sales were 1.6% or 33.5 GWh above the June 2004 sales update projections for 2004. Examining this difference by component, the 2004 average number of customers was 0.2% or 404 below the June 2004 update, resulting in sales being lower by 3.4 GWh. On the other hand, the use per customer was 1.8% or 12 kWh per customer per month higher than the update, contributing to sales being higher by 36.9 GWh.

The average number of residential customers was expected to grow by 2,700 in

estate market coupled with increased disposable income from re-financed mortgages contributed to strong use growth in 2002 and 2003. This growth continued into the beginning of 2004, but the June 2004 update expected the growth to slow in the 2nd half of 2004 because of the large increases that had been experienced in the 2nd half of 2003. Residential use per customer growth was expected to stabilize as interest rates rose and because the increase in the previous two years had been so strong. The robust growth continued through much of 2004, however, as interest rates remained at historically low levels and the real estate market remained active. Weather normalized residential use per customer did finally begin to slow in the last quarter of 2004 as seen on page 14 of HECO's response to CA-IR-23.

b. HECO's test year average residential use does appear to be low given the strong growth seen in 2004. It is not evident, however, that the 2.4% growth in weather normalized average use per customer in 2004 will continue at that high a level in the test year. The decrease in weather normalized billed use per customer year-over-year growth in the last two months of 2004 (as seen on page 14 of HECO's response to CA-IR-23), and a small 0.7% growth seen in January 2005, may indicate that the use per customer surge seen in 2002 – 2004 may have reached its peak and may see lower growth rates in 2005. HECO will be re-examining the residential sales forecast for 2005 in its next annual sales and peak forecast due to be issued in May 2005.

CA-IR-160

Ref: HECO T-2, Page 20 and HECO-WP-201, Page 34, Kukui Gardens.

a. Please provide copies of any updates to the Kukui Gardens customer transfers from Schedule P to Schedule R for 2004 and 2005.

b. Please provide the assumptions, data, and calculations used to derive the Kukui Gardens energy sales for 2004 to 2006.

c. The commitment of funds for the Kukui Gardens project was approved in Decision and Order No. 20406 filed in Docket No. 03-0107 on September 2, 2003.

   1. Please provide the current status of the company's efforts to complete this CIP project.

   2. Please provide details of any changes to the scope of the project that would change the electrical energy and demand effects of the project from the information provided with the application filed in Docket No. 03-0107.

HECO Response:

a. There are no copies of updates to customer transfers. The projections for Kukui Gardens were based on the number of units in the project and the Schedule P historical usage. Estimates of when the conversions would begin and over how long a period the conversions would occur were based on conversations with HECO's Marketing Services which is in contact with the Kukui Gardens management. The conversion from Schedule P to Schedule R was delayed from the February 2004 sales forecast estimated date of April 2004 [illegible]

Schedule R customers in 2004 and an additional 574 in 2005. The calculation of the annual average number of customers transferred in the June 2004 update is shown on page 3 of HECO's response to CA-IR-160, and will be provided in electronic format on a CD labeled CA-IR-160 under separate transmittal.

In the February 2004 sales forecast, it was estimated that conversions would begin in April 2004 and continue for 11 months. At the same time, it was estimated that 1.6 GWh would be transferred in 2004, and the remainder, a total of 4.4 GWh per year, in 2005. The 4.4 GWh was based on average use under Schedule P and the assumption that some common area use would remain in commercial sales. The June 2004 sales update delayed the conversions to June 2004 and extended the conversion period to 16 months. It was assumed that the 1.6 GWh would still be transferred in 2004, ramping to 4.1 GWh in 2005, then the full 4.4 GWh in 2006. There are no worksheets for the GWh sales transfers.

c. 1. All of HECO's construction work has been completed. HECO is waiting for an easement from the customer prior to energizing the system.

1. There are no changes in the scope of the project that would change the electrical energy and demand effects provided with the application filed in Docket No. 03-0107.

Kukui Gardens Conversion - June 2004 Update

Units =	857
No. of months for conversion =	16
Units converted per month =	54

Conversion to "R" expected to begin June 2004:

	No. of Units Converted	Cumulative Converted	Annual Average No. of Cust
Jan-04	0	0	
Feb-04	0	0	
Mar-04	0	0	
Apr-04	0	0	
May-04	0	0	
Jun-04	54	54	
Jul-04	54	108	
Aug-04	54	162	
Sep-04	54	216	
Oct-04	54	270	
Nov-04	54	324	
Dec-04	54	378	**126**
Jan-05	54	432	
Feb-05	54	486	
Mar-05	54	540	
Apr-05	54	594	
May-05	54	648	
Jun-05	54	702	
Jul-05	54	756	
Aug-05	54	810	
Sep-05	47	857	
Oct-05	0	857	
Nov-05	0	857	
Dec-05	0	857	**700**
Jan-06	0	857	
Feb-06	0	857	
Mar-06	0	857	
Apr-06	0	857	
May-06	0	857	
Jun-06	0	857	
Jul-06	0	857	
Aug-06	0	857	
Sep-06	0	857	
Oct-06	0	857	
Nov-06	0	857	
Dec-06	0	857	**857**

CA-IR-161

Ref: HECO T-2, Page 2, Line 22.

The Consumer Advocate understands that HECO prepares quarterly sales forecast updates. Based on this understanding, please provide a copy of all quarterly updated forecasts to the February 2004 forecast, together with the workpapers and meeting notes to support each update.

HECO Response:

See response to CA-IR-24 (b). The June 2004 sales update in HECO-WP-201 is the last quarterly update approved by HECO's executive staff and the voluminous workpapers were made available for review at HECO's office (see letter to Ms. Sharon Nishi, January 25, 2005).

CA-IR-162

Ref: February 2004 voluminous workpapers.

a. Please provide the electronic data files for Appendix O and P with all formulae and cell references intact.

b. Please include any updates for the 2003 and 2004 calendar years.

HECO Response:

a. The electronic data files for Appendix O pages 7 - 17 and pages 61 – 66 and Appendix P are provided on a CD labeled CA-IR-162 under separate transmittal. Data for the other pages in Appendix O were previously provided in response to CA-IR-23 and CA-IR-156.

b. The data has been updated for 2003 and 2004.

CA-IR-163

Ref: HECO-WP-201, Page 15 and Appendix F of February 2004 voluminous workpapers.

a. Please provide a copy of the assumptions and calculations used to determine the future DSM impacts by rate class for 2004 and 2005.

b. If another witness is responsible for the response to this information request, identify the witness.

c. Please provide a copy of the electronic files for the voluminous workpapers, with all formulae and cell references intact.

HECO's Response

a. See pages 2 thru 4 attached to this response.

b. The witness responsible for this response is Mr. Hee, HECO T-10.

c. An electronic MS Excel file labeled CA-IR-163 will be provided under separate transmittal.

MONTHS	SEASONAL	RAMP	UNRAMP
1	0.08493	0.08493	0.91507
2	0.07671	0.16164	0.83836
3	0.08493	0.24658	0.75342
4	0.08219	0.32877	0.67123
5	0.08493	0.41370	0.58630
6	0.08219	0.49589	0.50411
7	0.08493	0.58082	0.41918
8	0.08493	0.66575	0.33425
9	0.08219	0.74795	0.25205
10	0.08493	0.83288	0.16712
11	0.08219	0.91507	0.08493
12	0.08493	1.00000	0.00000

YEARS	2003	2004	2005
EE kW (System - Gross)		5,776	12,982
Freerider % (kW)		27.32%	22.92%
EE MWh (System - Gross)		32,944	73,474
Freerider % (kWh)		30.18%	25.49%
Gross T&D Loss Factor	11.17%	11.17%	11.17%
kW (Customer - Net)		3,729	8,889
Net T&D Loss Factor		4.864%	4.864%
Coincidence Factor		100.00%	100.00%
kW (System - Net)	0	3,920	9,344
Prior kW		0	3,920
Months			
1	0	333	4,713
2	0	634	5,430
3	0	967	6,224
4	0	1,289	6,992
5	0	1,622	7,785
6	0	1,944	8,553
7	0	2,277	9,347
8	0	2,610	10,140
9	0	2,932	10,908
10	0	3,265	11,702
11	0	3,587	12,470
12	0	3,920	13,263
Annual	0	3,920	13,263
MWh (Customer - Net)		20,431	48,632
MWh (Customer - R)	0	2,923	18,669
Prior MWh		0	2,923
Months			
1	0	21	383
2	0	36	456
3	0	61	639
4	0	79	745
5	0	103	904
6	0	119	1,001
7	0	144	1,169
8	0	165	1,304
9	0	180	1,388
10	0	207	1,569
11	0	220	1,644
12	0	248	1,834

YEARS	2003	2004	2005
Total	0	1,584	13,037
MWh (Customer - E)	0	30	64
Prior MWh		0	30
Months			
1	0	0	3
2	0	0	3
3	0	1	4
4	0	1	4
5	0	1	5
6	0	1	5
7	0	1	6
8	0	2	6
9	0	2	6
10	0	2	7
11	0	2	7
12	0	3	8
Total	0	16	65
MWh (Customer - G)	0	624	1,066
Prior MWh		0	624
Months			
1	0	5	61
2	0	8	61
3	0	13	75
4	0	17	80
5	0	22	90
6	0	25	95
7	0	31	106
8	0	35	113
9	0	38	117
10	0	44	128
11	0	47	131
12	0	53	143
Total	0	338	1,201
MWh (Customer - H)	0	42	72
Prior MWh		0	42
Months			
1	0	0	4
2	0	1	4
3	0	1	5
4	0	1	5
5	0	1	6
6	0	2	6
7	0	2	7
8	0	2	8
9	0	3	8
10	0	3	9
11	0	3	9
12	0	4	10
Total	0	23	81

YEARS	2003	2004	2005
MWh (Customer - J)	0	3,842	6,373
Prior MWh		0	3,842
Months			
1	0	28	372
2	0	48	374
3	0	80	460
4	0	104	488
5	0	135	550
6	0	157	576
7	0	190	641
8	0	217	687
9	0	236	708
10	0	272	777
11	0	289	795
12	0	326	868
Total	0	2,081	7,294
MWh (Customer - P)	0	12,970	22,389
Prior MWh		0	12,970
Months			
1	0	94	1,263
2	0	161	1,273
3	0	272	1,570
4	0	350	1,671
5	0	456	1,888
6	0	529	1,979
7	0	640	2,206
8	0	733	2,367
9	0	797	2,442
10	0	917	2,685
11	0	975	2,750
12	0	1,102	3,003
Total	0	7,026	25,098
Check	-	20,431	48,632

Ramped Impacts			
Jan	**0**	**147**	**2,086**
Feb	**0**	**253**	**2,170**
Mar	**0**	**428**	**2,754**
Apr	**0**	**552**	**2,993**
May	**0**	**718**	**3,444**
Jun	**0**	**833**	**3,661**
Jul	**0**	**1,008**	**4,134**
Aug	**0**	**1,155**	**4,485**
Sep	**0**	**1,256**	**4,669**
Oct	**0**	**1,445**	**5,175**
Nov	**0**	**1,537**	**5,337**
Dec	**0**	**1,735**	**5,866**
Total Ramped	**0**	**11,068**	**46,775**

CA-IR-164

Ref: Appendix E, Page 41 of February 2004 voluminous workpapers.

a. Please provide copies of the documents relied upon to determined the new construction estimates that Marketing Services used for the February 2004 forecast.

b. Please provide copies of any updates to the new construction estimates reflected in the February 2004.

HECO Response:

a. The housing type split of new accounts referenced on page 41 of Appendix E of the February 2004 forecast voluminous workpapers are based on the worksheet shown on page 2 of HECO's response to CA-IR-164. The worksheet will also be provided electronically in MS Excel format on a CD labeled CA-IR-164 under separate transmittal. The data for the worksheet was obtained primarily through discussions with various customers and documents were not provided by the customers.

b. The new construction estimates used for page 41 of the February 2004 forecast workpapers have not been updated since February 2002, the date of the information provided in part (a) above.

	SINGLE FAMILY NEW CONSTRUCTION FORECAST FOR Feb 2002								
	HECO Energy Services Department								
	February 1, 2002								
SF/MF?	**Developer**	**PROJECT**	**Phase**	**# of Units**	**2001**	**2002**	**2003**	**2004**	**2005**
MF				116		40	40	36	
MF				270	52	50	50	50	
MF				88	0		88		
MF				120				120	
MF				72				72	
MF				61	0	61	0		
MF				64	0	0	64		
MF				126		0	100	26	
MF					88	20			
MF				756	122	50	50		
MULTI-FAMILY Total					**262**	**221**	**392**	**304**	**0**
MF-detached				80	24				
MF-detached				99	18	81			
MF-detached				154	0	36	118		
SF									
SF				45	0	30	15		
SF				74	0	74	0		
SF				95	0	23	72	0	
SF				74	0	0	74		
SF				51	24	27			
SF				81	0		81		
SF				44	0	44			
SF				102	56	46	0		
SF				224	0	3	125	99	
SF				59	18	41			
SF				90		48	42		
SF				5	0		5		
SF				23	0		23		
SF				23	0		23		
SF				23	0			23	
SF				23	0			23	
SF				23	0			23	
SF				22	0			22	
SF				22	0				22
SF				22	0				22
SF				22	0				22
SF				22	0				22
SF				259	42	50	50	100	
SF				285	108	136	0	0	
SF				431	0	0	0	0	
SF				304	0	0	0	0	
SF				191	21	30	30	33	
SF				238	0	0	0		
SF				254	67	10	0		
SF				192	157	35			
SF				369	0	185	100	84	
SF				304	0	0	52	252	
SF				15	5	7			
SF				358	0	100	100	100	
SF				81	0	81			
SF				425	52	150	50	50	
SF				800			80		
SF				9	0	9			
SF				26	26				
SF				35	40				
SF				93	17	76			
SF				140		50			
SF				449					
SF				81	3	20	20	20	
SF-Condo				286	24				
SINGLE-FAMILY Total					**702**	**1,392**	**1,060**	**829**	**88**
Grand Total					**964**	**1,613**	**1,452**	**1,133**	**88**
% SINGLE-FAMILY					**72.8%**	**86.3%**	**73.0%**	**73.2%**	**100.0%**

CA-IR-165

Ref: HECO T-2, Page 30, Lines 11 to 14.

Please provide copies of any documents received from the military to support the activities and

construction schedules for the military's projected loads in the 2005 test year.

HECO Response:

HECO receives information from the military regarding its planned construction activities through discussions and meetings with the military and as part of HECO's Marketing Services

Due to the voluminous nature of the information, one copy (pages 2 -535) will be provided to the Consumer Advocate and the Public Utilities Commission under separate transmittal.

CA-IR-166

Ref: HECO T-3, Schedule J Demand Ratchet Change, HECO-WP-304, Page 50.

Please explain the procedures employed by HECO to quantify the revenue impact of the proposed change in the demand ratchet at present and proposed rate levels and provide the underlying billing data and calculations associated with HECO's quantification of same.

HECO Response:

The procedure used to quantify the revenue impact of the proposed change in the demand ratchet at proposed rate levels is described generally in HECO T-3, page 4, lines 7-14. The proposed change in the Schedule J demand ratchet does not affect the calculation of revenues at present rates. The effect of the proposed change in the Schedule J demand ratchet changes the estimate of forecast billed kW at proposed rates (makes it higher than the forecast billed kW at present rates) and changes the allocation of the forecast mWh at proposed rates (more mWh are allocated to the first energy rate block than at present rates), as shown in HECO-304, page 3. The billing data and calculations used in the estimate of forecast billed kW at proposed rates and the allocation of forecast mWh at proposed rates, due to the effect of changing the Schedule J demand ratchet, are shown in HECO-WP-304, pages 46-50. Those pages are attached as pages 4 – 8 of this IR response with alphabetical sections noted, and will be referenced in the following discussion.

As described in HECO T-3, page 3, 2003 recorded billing data was used to estimate the distribution of mWh sales, number of bills, and kWb among load factor blocks, as shown in the section "A" on page 4 of this response, and in the section "C" on page 5 of this response. The percentages in section "A" are applied to the test year forecast mWh and bills to estimate the allocation of mWh sales and bills at present rates, shown in the section "B" on page 4 of this

response. The load factors calculated in section "C" are applied to the sales in section "B" to derive the estimate for billed kW at present rates shown in section "D" (page 5 of this response).

On HECO-WP-304, pages 49-50, an extract of 2003 recorded billing data was used to build the calculation of the percentage change in billing kW required at the proposed Schedule J demand ratchet. This 2003 data set is somewhat smaller than the recorded 2003 billing data described at HECO T-3, page 3, and shown in section "A", because it only includes bills for Schedule J customers that had bills in each of 24 months, January 2002 to January 2003, in order to facilitate re-calculation of Schedule J kWb at the proposed Schedule J ratchet, outside of the billing system program. From this adjusted 2003 recorded data set, kWh sales, bills, and billed kW are shown in their appropriate load factor blocks as recorded data at present rates, based on the existing Schedule J ratchet, as shown in section "F" on page 7 of this response and in section "J" on page 8 of this response. The percentages in section "F" are applied to the test year forecast mWh and bills to estimate the allocation of mWh sales and bills at present rates, shown in the section "G" on page 7 of this response. The load factors calculated in section "J" are applied to the sales in section "G" to derive the estimate for billed kW at present rates shown in section "K" on page 8 of this response.

Billed kW was re-calculated for each customer bill based on the proposed Schedule J ratchet, and placed in its appropriate load factor block as recorded data at proposed rates, as shown in section "L" on page 8 of this response. Sales load factors (kWh/kWb) were re-calculated for each bill. The KWh sales and bills were then adjusted to load factor blocks as recorded data at proposed rates, as shown in section "H" on page 7 of this response. The

response. The load factors calculated in section "L" are applied to the sales in section "I" to derive the estimate for billed kW at proposed rates shown in section "M" on page 8 of this response.

The estimated billed kW at proposed rates in section "M" is compared to the estimated billed kW at present rates in section "K", by load factor block. The percentage change in estimated billed kW for each respective load factor block is applied to the [redacted]

HAWAIIAN ELECTRIC COMPANY, INC.
Docket No. 04-0113, Test-Year 2005
Schedule J - General Service Demand

Determination of Billing Loads By Rate Block For Total J

A

AT PRESENT RATES	SALES		NUMBER OF BILLS	
	MWH	% OF TOTAL	BILLS	% OF TOTAL
RECORDED:				
0 - 200 KWH/KW	151,219.6	7.85	12,664	16.44
201 - 400 KWH/KW	917,306.7	47.62	44,935	58.32
> 400 KWH/KW	857,609.8	44.53	19,451	25.24
TOTAL	1,926,136.1	100.00	77,050	100.00

B

FORECAST:	% OF TOTAL	MWH	% OF TOTAL	BILLS
0 - 200 KWH/KW	7.85	158,327	16.44	13,178
201 - 200 KWH/KW	47.62	960,448	58.32	46,749
> 400 KWH/KW	44.53	898,125	25.24	20,233
TOTAL	100.00	2,016,900	100.00	80,160

HAWAIIAN ELECTRIC COMPANY, INC.
Docket No. 04-0113, Test-Year 2005
Schedule J - General Service Demand

Determination of Billing Loads By Rate Block For Total J

	RECORDED		FORECAST	
LOAD FACTOR BLOCKS:	KW	KWH/KW	PRESENT	PROPOSED

[redacted]

HAWAIIAN ELECTRIC COMPANY, INC.
Docket No. 04-0113, Test-Year 2005
Schedule J - General Service Demand

Determination of Billing Loads By Rate Block For Total J

	PRESENT RATES				
	LOAD FACTOR BLOCK (KWH/KW)				
LOAD FACTOR BLOCK:	0 - 200	201 - 400	> 400	TOTAL	
0 - 200 KWH/KW	158,327	646,766	361,994	1,167,087	Allocation at Present Rates
201 - 400 KWH/KW	0	313,682	361,994	675,676	
> 400 KWH/KW	0	0	174,137	174,137	
TOTAL	158,327	960,448	898,125	2,016,900	
FORECAST AT PRESENT RATES:					
SALES - MWH	158,327	960,448	898,125	2,016,900	From "B"
BILLS	13,178	46,749	20,233	80,160	From "B"
KW, BILLED	1,440,384	3,233,832	1,809,970	6,484,186	From "D"

	PROPOSED RATES				
	LOAD FACTOR BLOCK (KWH/KW)				
LOAD FACTOR BLOCK:	0 - 200	201 - 400	> 400	TOTAL	
0 - 200 KWH/KW	184,546	686,510	337,931	1,208,987	Allocation at Proposed Rates
201 - 400 KWH/KW	0	301,973	337,931	639,904	
> 400 KWH/KW	0	0	168,009	168,009	
TOTAL	184,546	988,483	843,872	2,016,900	
FORECAST AT PROPOSED RATES:					
SALES - MWH	184,546	988,483	843,871	2,016,900	From "I"
BILLS	13,050	47,230	19,880	80,160	From "I"
KW, BILLED	1,632,152	3,432,548	1,689,657	6,754,357	From "E"

HAWAIIAN ELECTRIC COMPANY, INC.
Docket No. 04-0113, Test-Year 2005
Schedule J - General Service Demand

Determination of Billing Loads By Rate Block For Total J

Using Sch J Extract Data - 75% Ratchet at Present; Average Ratchet at Proposed

AT PRESENT RATES	SALES		NUMBER OF BILLS	
	MWH	% OF TOTAL	BILLS	% OF TOTAL
RECORDED:				
0 - 200 KWH/KW	129,504.4	7.99	8,797	14.62
201 - 400 KWH/KW	752,043.9	46.37	34,768	57.80
> 400 KWH/KW	740,146.8	45.64	16,591	27.58
F TOTAL	1,621,695.1	100.00	60,156	100.00

FORECAST:	% OF TOTAL	MWH	% OF TOTAL	BILLS
0 - 200 KWH/KW	7.99	161,150	14.62	11,719
201 - 200 KWH/KW	46.37	935,237	57.80	46,332
> 400 KWH/KW	45.64	920,513	27.58	22,109
G TOTAL	100.00	2,016,900	100.00	80,160

AT PROPOSED RATES	SALES		NUMBER OF BILLS	
	MWH	% OF TOTAL	BILLS	% OF TOTAL
RECORDED:				
0 - 200 KWH/KW	148,415.9	9.15	9,794	16.28
201 - 400 KWH/KW	794,814.6	49.01	35,446	58.92
> 400 KWH/KW	678,464.7	41.84	14,916	24.80
H TOTAL	1,621,695.1	100.00	60,156	100.00

FORECAST:	% OF TOTAL	MWH	% OF TOTAL	BILLS
0 - 200 KWH/KW	9.15	184,546	16.28	13,050
201 - 200 KWH/KW	49.01	988,483	58.92	47,230
> 400 KWH/KW	41.84	843,871	24.80	19,880
I TOTAL	100.00	2,016,900	100.00	80,160

HAWAIIAN ELECTRIC COMPANY, INC.
Docket No. 04-0113, Test-Year 2005
Schedule J - General Service Demand

Determination of Billing Loads By Rate Block For Total J

Using Sch J Extract Data - 75% Ratchet at Present; Average Ratchet at Proposed

AT PRESENT RATES	RECORDED		FORECAST	
LOAD FACTOR BLOCKS:	KW	KWH/KW	PRESENT	PROPOSED
0 - 200 KWH/KW	949,398.4	136.41	1,181,365	
201 - 400 KWH/KW	2,519,163.3	298.53	3,132,807	
> 400 KWH/KW	1,495,490.5	494.92	1,859,923	
TOTAL	4,964,052.2	326.69	6,174,095	
J			K	

AT PROPOSED RATES	RECORDED		FORECAST	
LOAD FACTOR BLOCKS:	KW	KWH/KW	PRESENT	PROPOSED
0 - 200 KWH/KW	1,076,550.4	137.86		1,338,648
201 - 400 KWH/KW	2,673,772.4	297.26		3,325,315
> 400 KWH/KW	1,395,967.2	486.02		1,736,289
TOTAL	5,146,290.0	315.12		6,400,252
L				M

CA-IR-167

Ref: HECO-303, Other Revenues billing determinants.

Please provide (a) the historical transaction volumes associated with each element of other revenues; and (b) copies of all other analyses and information used to derive such revenues at present and proposed rate levels.

HECO Response:

See the attached sheets on pages 2 to 8 to this response for the requested information for the non-sales electric utility charges shown on HECO-303.

Hawaiian Electric Company, Inc.
Other Operating Revenues
Non-Sales Electric Utility Charges

Estimate Late Payment Charges = 0.10 % of Electric Revenues.

In $000s	Electric Revenues	Estimated Late Payment Charges
At Present Rates	$994,032	$994.0
At Proposed Rates	$1,091,883	$1,091.9
	Source: HECO-301	

Late Payment Charges History

Year	Late Payment Charges	Billed Revenue *	% of Billed Revenue
2003	$903,373	$960,784,246	0.094%
2002	$813,383	$858,635,467	0.095%
2001	$889,861	$891,698,554	0.100%
2000	$924,437	$874,206,004	0.106%
1999	$813,419	$725,604,327	0.112%
Total, 1999-2003	$4,344,474	$4,310,928,598	0.101%

* per HWRSRAA 'KWH Sales & Revenue - Billed Only Sales by Rate Schedule" report

Source: Customer Service Department

Hawaiian Electric Company, Inc.
Other Operating Revenues
Non-Sales Electric Utility Charges

Transactions History: Basis for Transactions at Present Rates

	1999	2000	2001	2002	2003	Total	Avg./Yr.
Service Establishment							
Regular	40,605	38,781	39,018	38,888	39,025	196,317	**39,263**
Same Day	10,812	10,542	10,378	7,723	8,504	47,959	**9,592**
[redacted]							
Returned Check	4,827	4,959	5,192	5,083	5,104	25,165	**5,033**

Field Collections at Proposed Rates: Charge for All Attempts to Collect

Successful Field Collections	6,643	(Basis for estimate of revenue at present rates)
÷ % successful	40%	
= Total Field Collection Attempts	**16,608**	(Basis for estimate of revenue at proposed rates)

Returned Payment Charges At Proposed Rates: Increase for Returned EDS payments

Returned Check	5,033	(Basis for estimate of revenue at present rates)
Increase for EDS payments	2%	
= Returned Payments	**5,136**	(Basis for estimate of revenue at proposed rates)

Hawaiian Electric Company, Inc.
Other Operating Revenues
Non-Sales Electric Utility Charges

Estimate successful Field Collection visits at 40% of total visits.

FIELD COLLECTIONS
Successful Attempts to Collect

	Total Attempts	Successful Attempts (Collection)	Disconnected	Arrangements	Unsuccessful Attempts (Disc + Arrg)
2002					
Counts	18,292	**7,269**	6,838	4,185	**11,023**
% of Total		**40%**	37%	23%	**60%**
2003					
Counts	17,805	**7,172**	7,743	2,890	**10,633**
% of Total		**40%**	43%	16%	**60%**
AVERAGE					
Counts	18,049	**7,221**	7,291	3,538	**10,828**
% of Total		**40%**	40%	20%	**60%**

Note: Voided field visits have been excluded from this analysis.

Source: Customer Service Department

Hawaiian Electric Company, Inc.
Other Operating Revenues
Non-Sales Electric Utility Charges

Estimate additional returned payments from EDS payments at approximately 2% of total.

EXTERNAL CHARGES FOR RETURNED ITEMS

Cost of returned items for Jan - May 2004

	Volume	% of total	$ Total	$/item
Bank of Hawaii	735	58%	$ 3,612	$ 4.91
First Hawaiian Bank	199	16%	$ 995	$ 5.00
Total Bank returned items	934	74%	$ 4,607	$ 4.93
Foodland	151	12%	539.85	$ 3.58
Automatic Bill Payment (ABP)	84.5	7%	338	$ 4.00
Checkfree [1]	70	6%	$ -	$ -
EDS Pay - Credit Cards	17	**1%**	$ -	$ -
EDS Pay - Checking/Savings Payments[2]	10	**1%**	$ -	$ -
Average cost of returned items	1267	100%	$ 5,485	$ 4.33

NOTE:
[1] Checkfree: Mar thruJul 2004 count of insufficient funds/uncollectibles was 72 ~ 14 per month.
[2] EDS Pay - checking/Saving Payments: May thru Aug 2004 8 ACH chargebacks (insufficient funds/uncollectibles) ~ 2 chargebacks per month

Source: Customer Service Department

Hawaiian Electric Company, Inc.
Other Operating Revenues
Non-Sales Electric Utility Charges

HECO Payment Protection Program Revenue Forecast

	Oct 2001 - Sep 2002	Oct 2002 - Sep2003	Average
(1) HECO Service fee	$53,540	$62,824	$58,182
(2) Net Revenue Sharing	$42,418	$29,483	$35,951
Annual Totals	$95,958	$92,307	$94,133
Monthly Average			$7,844
Rounded Value			$7,800
Estimate for the Year			**$93,600**

Footnotes:
(1) HECO receives a 20% service fee for services rendered and expenses incurred in connection with the Program. The service fee is 20% of the Net Collected Premium.

(2) If the Program has "excessive revenues" HECO and Central States Indemnity (CSI) will share the net revenues equally ("Net Revenue Sharing"). Any negative result of the net revenue sharing formula is carried forward to the next year.

Data sources:
CSI Program Review - Financial Accounting, Program Year Ending September 30, 2003
HECO Payment Protection Program ltr to Hawaii PUC, dtd June 18, 1998, program description

Source: Customer Service Department

Hawaiian Electric Company, Inc.
Other Operating Revenues
Non-Sales Electric Utility Charges

Estimate Late Payment Charges - OCARS = $10,000.

Late Payment Charges - OCARS, History

Year	Late Payment Charges OCARS
2003	$2,759
2002	$11,925
2001	$14,351
2000	$2,633
1999	$17,998
Total, 1999-2003	$49,665
Average Per Year, 5 Yrs.	$9,933

Source: Customer Service Department

Hawaiian Electric Company, Inc.
Other Operating Revenues
Non-Sales Electric Utility Charges

Purchase Power Metering Charges

Customer	Charges @ $25/Meter/Month
Tesoro	$300
Chevron	$300
Total, Test Year 2005	**$600**

CA-IR-168

Ref: HECO T-6, Page 4, Line 15.

According to the testimony, "HECO's EAF and EFOR are better than the national average because we are an isolated utility."

a. Please identify and describe each of the existing business goals and objectives regarding targeted EAF/EFOR levels.

b. Please identify all other Production Department business goals associated with safety, environmental compliance, percentage of preventive maintenance, overtime levels, O&M forecast achievement, etc.

HECO Response:

a. The 2005 O&M Department goal for Equivalent Availability Factor (EAF) is 83.10%. The 2005 O&M Department goal for Equivalent Force Outage Rate is 2.89%.

b. The O&M Department Goals for 2005 and relative performance in 2004 are summarized in the table on page 2 of this response.

O&M Department Goals

	Goal	2004 Actual	2005 Goal	Description of Goal
1	O&M Costs	$50,178,000	$57,000,000	Management of forecast expenditure
2	1429 Capital Expenditure	$1,588,000	$943,000	Management of forecast expenditure
3	Overtime Hours	107,654 Hours	101,992 Hours	Management of forecast overtime hours
4	Illness Absence Hours	17,545 Hours	19,420 Hours	Management of forecast illness absence hours
5	System Heat Rate	10,621 BTU/KWH	10,529 BTU/KWH	Management of forecast heat rate
6	Operational Heat Rate Variance	36 BTU/KWH	102 BTU/KWH	Management of controllable parameters impacting heat rate
7	Predictive Maintenance Usage	29%	30%	Percentage of predictive maintenance work
8	MWH Loss Due to Human Error	5,125 MWH	0 MWH, not to exceed 415 MWH	Amount of generation lost due to human error
9	Equivalent Availability Factor	86.05%	83.10%	Management of forecast EAF
10	Equivalent Forced Outage Rate	6.20%	2.89%	Management of forecast EFOR
11	Repeat Boiler Tube Failures	2	0	Number of repeat incidents of boiler tube failure
12	EAF Impact Due to Boiler Tube Failure	0.20%	0.50%	Equivalent EAF impact due to incidents of boiler tube failure
13	PaSTA Predictive Maintenance Compliance	51.80%	70.00%	Measurement of compliance for scheduled PM work in PaSTA (Planning and Scheduling Tool Assistant software)
14	PaSTA % Scheduled	82.80%	80.00%	Measurement of amount of labor manhours scheduled weekly in PaSTA
15	Incidents of Load Shed Due to IPP Trip	0	≤ 1	Number of incidents of load shed due to an IPP unit trip
16	Lost Time Severity Rate	330	105	Measurement of lost time hours per 100 employees
17	Restricted Duty Labor Hours	3,264 Hours	1,500 Hours	Amount of restricted duty hours
18	Medical Attention Incidents	13	10	Number of injuries resulting in medical attention
19	Corporate Image (No. of complaints)	0	0	Number of complaints received from the public
20	Notice of Violations/Fines	1	0	Number of NOV/fines imposed by regulatory agencies

CA-IR-169

Ref: HECO T-6, Page 5, Line 6.

According to the testimony, "...if demand is allowed to exceed supply, system frequency will begin to sag, and if it sags too low, customers will be shed from the system via automatic and/or manual means in an attempt to reestablish the balance between supply and demand." Please provide the following information:

a. Confirm that such load "shedding" has not occurred since December of 2002.

b. Describe all steps taken by HECO since that event, in response to problems identified by HECO within its letter from W. Bonnet filed on January 31, 2003 that discussed the findings from HECO's initial investigation of the incident that led to load shedding on December 19, 2002.

c. Provide copies of subsequent analyses and reports that were prepared in connection with the load shedding event in 2002 and problems identified in the Bonnet letter noted above.

d. Explain any changed circumstances and procedural improvements that have been taken by HECO to mitigate the risks of future load shedding.

HECO Response:

a. As shown in the table provided in CA-IR-1, Attachment 6, only one load shedding situation (Condition 4) was experienced since the December 19, 2002 incident. The Generation Condition 3 situations experienced in 2003 (1 incident), and 2004 (4 incidents) did not result in load shedding.

b. Below is a summary of the problems identified by HECO in the December 19, 2002

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incident report submitted to the Commission on January 31, 2003, and the respective resolution status.

Underfrequency Load Shedding:

In 2003 HECO completed a process of removing several critical customers from underfrequency blocks in HECO's Normal Load Shed Scheme. These critical customers included Castle Medical Center, Kaiser Hospital, Tripler Hospital, Camp Smith and

Kaneohe Marine Corps Base Hawaii. HECO is currently in the process of replacing the load from these critical customers that were removed from underfrequency blocks with load from "non-critical" customers. Furthermore, HECO will be evaluating the adequacy of the existing Normal Load Shed Scheme which will consider changes to the size and settings of the underfrequency blocks and the effects of these changes on improving protection against multiple generation outage scenarios.

Waiau 9 & 10 Underfrequency Operation:

Start up of Waiau 9 & 10 in response to emergency underfrequency situations has been resolved by a procedural change where Load Dispatch will notify the Waiau 7&8 Control Room to remotely start the two CT's using the "Emergency Start" function, and not the normal start function. The difference between the two functions is that the "Emergency Start" function will automatically start and increase generator output of the respective CT to peak load which is nominally 50 MW depending on ambient air conditions. The normal start function is designed to increase generator output to its Spinning Reserve (SR) load control point of approximately 12MW. In normal start mode, Operator intervention is required to increase generation to Peak load and to switch the mode of control from load control (i.e., SR) to frequency control.

Kahe 3 Trip:

On 12/19/02, K3 tripped due to a turbine control problem. The 12/19/02 Load Shed incident was the first major incident experienced on K3 since the installation of new turbine controls earlier in the year. Shortly after the incident engineers from the turbine control manufacturer were on site to troubleshoot the turbine control problems. The new DCS turbine control installed on K3 replaced the original control and was the first of its kind on any steam unit.

The problem was isolated to an incorrect setting in the turbine control logic and modifications to the control logic were installed during a maintenance outage in March, 2003. The changes were tested on line and passed. The turbine controls have since operated properly during subsequent system frequency disturbances

AES Trip:

On 12/19/02, AES rapidly lost 180 MW of output after experiencing a serious leak on the "A" boiler feed pump discharge flange gasket that damaged critical electrical equipment in the area, causing the plant to lose control power to its distributed control system (DCS). Also, following the rapid load rejection of 180 MW, the generator failed to immediately trip off line and motorized for 29 seconds before it finally tripped. To prevent future occurrences of this nature, AES installed a protective enclosure around all critical equipment in the area, and added additional power supply back up capability to the Distributed Processor Unit (DPU) to ensure that the generator will trip on reverse power as designed to prevent motoring.

HRRV Trip:

On 12/19/02 HRRV lost one boiler when AES tripped due to an induced draft fan problem in one of its two boilers due to the underfrequency condition. Tripping one boiler resulted in reducing HRRV output from 44 MW to 17 MW. This further reduced system frequency to 58 hz, when HRRV tripped off line. Since Dec. 19, 2002, numerous issues were identified and addressed with HRRV, which ultimately resulted in improved reliability. First, the electronics on the Induced Draft fan drives were replaced with a system than is able to function in underfrequency conditions. Second, the generator relay (Basler) was replaced, and changes to the relay settings were made to prevent premature trips. Third, motor control

circuitry was changed to improve ride-through operation during underfrequency conditions.

Finally, HRRV [redacted]

control room to provide immediate voice communication to the HECO Load Dispatchers. HRRV has since operated more reliably during system disturbances.

Energy Management System (EMS):

Commission approval for the EMS project was received on August 6, 2004. Construction of the new facility to house the new EMS began on November 1, 2004. Target date for completion is March, 2006.

supply and customer demand result from abnormal situations. The specific items that initiated the 12/19/02 incident (AES trip, HRRV trip, K3 trip, W9 & W10 operation), were resolved as explained in "b" above. Subsequent and successful underfrequency operation/restoration occurred on several occasions in 2003 and 2004 during which HECO only was able to have enough generation on line to serve existing load without any spinning reserve if an operating unit was forced off line. During a few of these periods, the system frequency was temporarily at a level less than 60 Hz (but not below the 58.5 Hz level at which load shedding takes place with a 10-second delay). The corrective actions on the K3 turbine controls and the HRRV variable speed control ride-through capabilities worked during these situations in 2003 and 2004. Other enhancements such as modifying the underfrequency load shedding scheme and installation of the EMS, OMS and CIS systems are in various stages of implementation as discussed in "b" above.

CA-IR-170

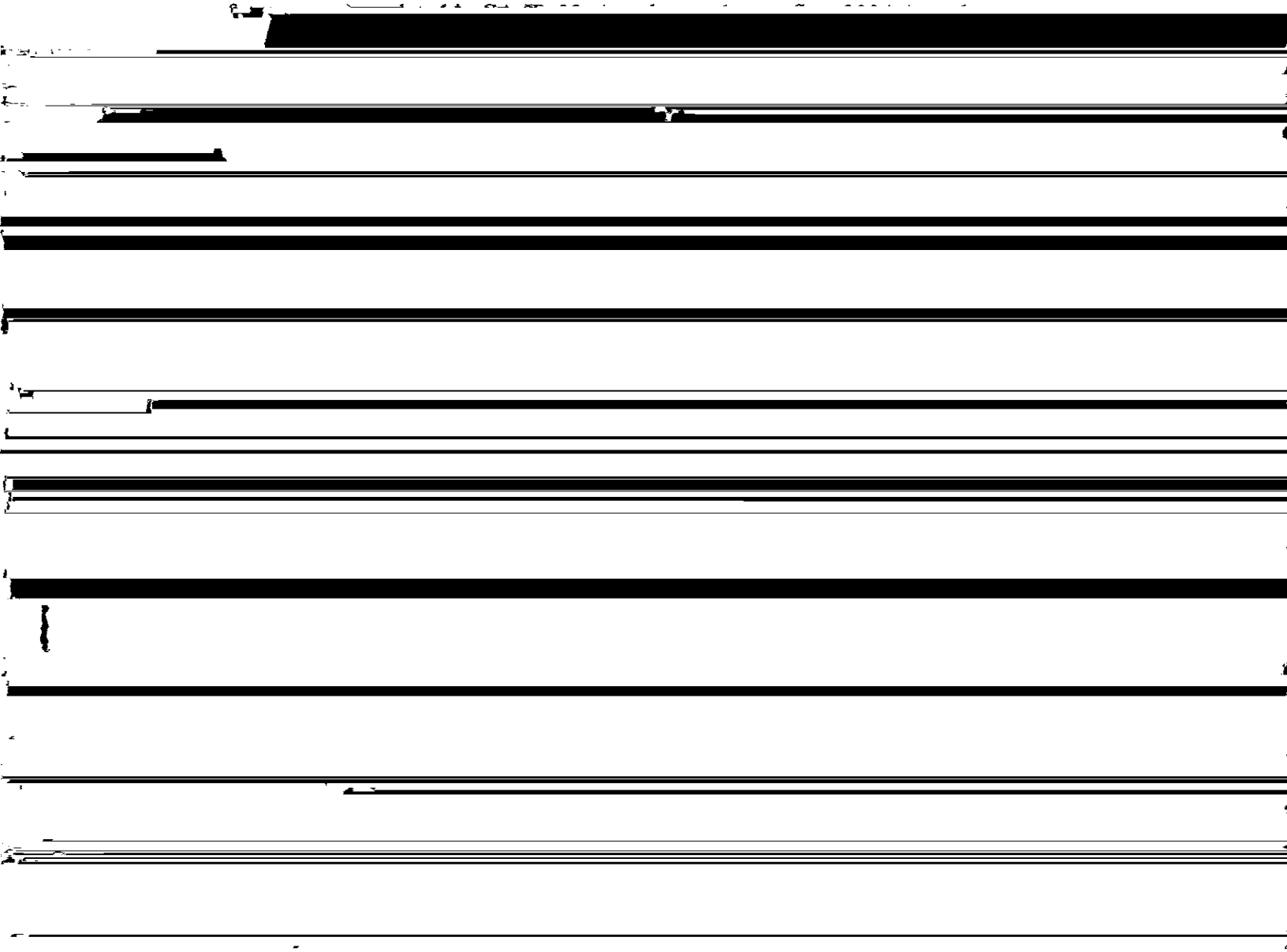
Ref: HECO T-6, Page 8, Line 22.

According to the testimony, "[t]he rapidly growing demand will increase Other Production O&M [redacted]

and reserve margins decrease." Please provide the following information:

a. State whether HECO has any studies or other empirical evidence to support the quoted statement.

- HECO-608 (W9 & 10 Annual Service Hours from 1973 – 2004 YTD and projected

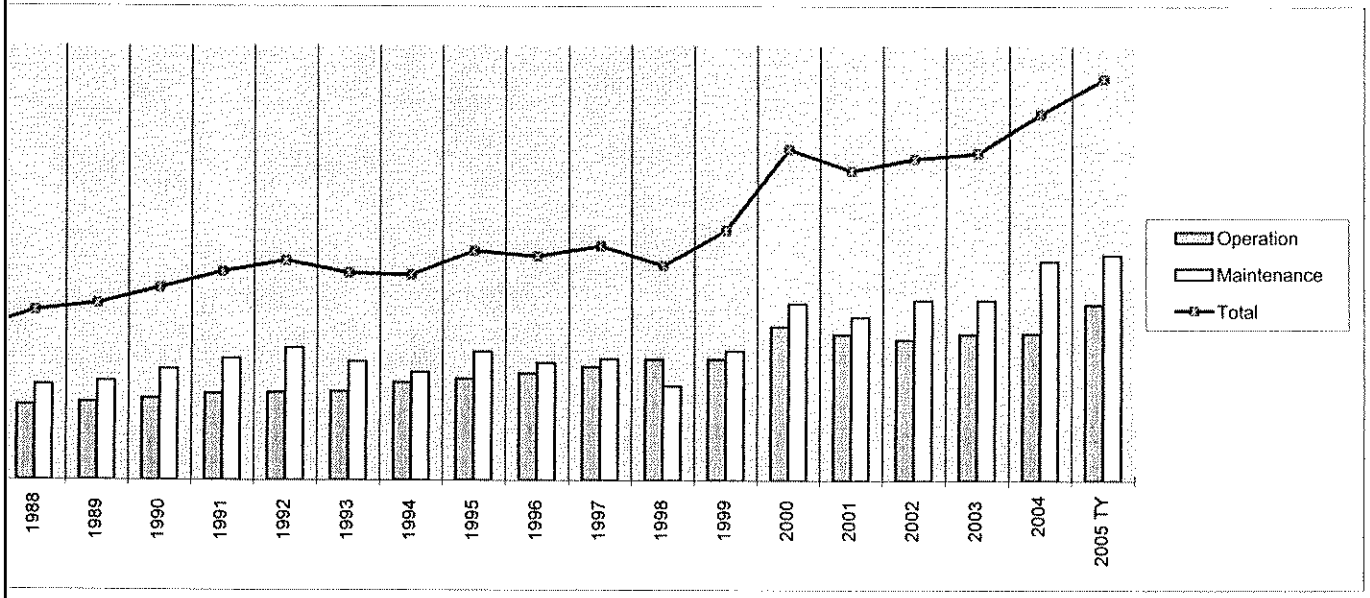


- HECO-609 (Cycling Unit Service Hours from 1986 – 2004 YTD), updated in CA-IR-34, Attachment 1, to reflect 2004 Actual,
- CA-IR-40, Attachment 1 (Cycling Unit Starts),
- HECO-611 (2003 Planned vs Actual Maintenance Schedule)
- HECO-612 (2004 Planned vs Actual to October, 2004, Maintenance Schedule), updated in CA-IR-42, Attachment 1, to reflect Actual 2004 results,
- HECO-619 (Operations Staffing increase)
- HECO-620 (Operations Labor Overtime trends from 2001 to 8/2004), updated in CA-

experienced in the late 80's. It must be noted that the ages of the HECO generating units were approximately 20 years younger back in 1986. As discussed throughout HECO T-6 and CA-IR responses, the fact that older units are running harder to meet rapidly growing demand is causing 1) the need to ensure 24x7 availability of all generating units resulting in the need to increase operator staff, and 2) increased maintenance requirements resulting in the need to increase trades and craft personnel and associated support staff to mitigate the potential for capacity shortfall situations. The significant rise in Other Production O&M expenses from 1999 up to the 2005 TY forecast provides a more current indication of increased resource needs.

ost

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005 TY
9	10,736	11,251	11,955	12,079	12,217	13,458	13,972	14,749	15,629	16,667	16,673	21,190	20,150	19,414	20,173	20,286	24,282
9	13,671	15,319	16,787	18,191	16,344	14,862	17,686	16,147	16,673	12,955	17,798	24,377	22,521	24,880	24,880	30,171	31,003
8	24,407	26,570	28,742	30,270	28,561	28,320	31,658	30,896	32,302	29,622	34,471	45,567	42,671	44,294	45,053	50,457	55,285
4	949	2,163	2,172	1,528	(1,709)	(241)	3,338	(762)	1,406	(2,680)	4,849	11,096	(2,896)	1,623	759	5,404	4,828



CA-IR-171

Ref: HECO Response to CA-IR-1, HECO T-6, Attachment 1, Production O&M labor cost projections.

Please provide the following information associated with the Labor Hours and Direct Labor by RA amounts reflected in the Company's test year forecast:

a. Provide additional information for nonproductive time loadings, clearings and any other overheads added to the amounts shown in Attachment 1, total direct labor of $23,165,139 that is needed to reconcile to the labor amounts shown in HECO-615.

b. Please provide a payroll distribution (dollars and percentages) for total production department direct labor, indicating test year projected amounts charged to capital additions, retirements, billed to others, deferred and charged to expense.

c. Please provide comparable actual payroll distribution data (dollars and percentages) indicating the actual percentage of production departmental direct labor that was charged to capital additions, retirements, billed to others, deferred and charged to expense in each year 2002, 2003 and 2004.

consistent when comparing the actual years to the 2005 test year. The increase in O&M cost from 2001 to 2005 test year supports the position that the Production Department has been experiencing more O&M expense and expects to incur more in the future. The increase is due to the expense factors identified in HECO T-6 such as aging units, running the units harder, growing demand, etc.

Hawaiian Electric Company Inc.
Rate Case - Test Year 2005
Total Labor

	Prod Operation	Prod Maintenance	Total	
Direct Labor	12,010,334	11,154,798	23,165,132	
Indirect Labor	1,387,868	1,217,686	2,605,554	See Note 1)
Total Labor	13,398,202	12,372,484	25,770,686	

Note:
1) Indirect cost classified with labor is for Non-Productive Wages, Expense Element 421. Non-Productive wages include pay for vacation, holidays, leave with pay and sick leave.

PRODUCTION DEPARTMENT ONLY - DIRECT LABOR
RA = PI@ ONLY
(Expense Elements 150 and 155)

Resp Area	Acct Group	2002	2003	2004	2005		Total Labor
Admin-PS Services	Billable	313	0	6,906	0		
(PIA)	Capital	0	0	0	0		
	Charges to Clearing	58,638	58,995	64,681	98,503		
	Fuel & Purch Pwr	988	0	302	14,565		
	O&M	70,285	51,120	78,136	207,215	(A)	
Grand Total		130,224	110,115	150,025	320,283		710,647
Admin-PS O&M	Billable	455	29	0	0		
(PIB)	Capital	0	2,933	188	0		
	Charges to Clearing	121,437	153,584	228,738	267,508		
	Fuel & Purch Pwr	63	0	639	0		
	O&M	241,284	219,064	227,306	419,892	(A)	
Grand Total		363,239	375,610	456,871	687,400		1,883,120
Power Purchase	Billable	83,695	62,418	63,062	64,962		
(PIC)	Capital	0	0	0	0		
	Charges to Clearing	3,055	2,216	20,357	20,534		
	Fuel & Purch Pwr	0	0	0	0		
	O&M	261,482	273,212	288,830	267,990	(A)	
Grand Total		348,232	337,846	372,249	353,486		1,411,813
PS Technical Service	Billable	7,849	0	0	0		
(PIE)	Capital	40,136	0	0	0		
	Charges to Clearing	56,234	0	0	0		
	Fuel & Purch Pwr	68,477	0	0	0		
	O&M	377,890	0	0	0	(A)	
Grand Total		550,586	0	0	0		550,586
Fuel Resources	Billable	45,864	50,142	46,170	84,996		
(PIF)	Capital	0	1,126	8,000	0		
	Charges to Clearing	890	2,873	3,114	0		
	Fuel & Purch Pwr	83,860	128,567	148,262	167,108		
	O&M	34,858	50,375	41,056	52,296	(A)	
Grand Total		165,472	233,083	246,602	304,400		949,557
Kahe Stn Oper	Billable	0	0	3,578	0		
(PIK)	Capital	0	1,602	0	0		
	Charges to Clearing	303,329	157,543	246,957	316,562		
	Fuel & Purch Pwr	62,929	54,741	67,590	0		
	O&M	3,126,566	3,331,180	3,477,651	3,636,594	(A)	
Grand Total		3,492,824	3,545,066	3,795,776	3,953,156		14,786,822
Kahe Stn Maint	Billable	0	(391)	0	0		
(PIL)	Capital	143,261	97,115	172,902	98,455		
	Charges to Clearing	93,386	90,473	109,082	94,111		
	Fuel & Purch Pwr	0	0	0	0		
	O&M	1,554,820	1,732,827	1,636,902	2,378,578	(A)	
Grand Total		1,791,467	1,920,024	1,918,886	2,571,144		8,201,521
Maint Admin	Billable	0	0	0	0		
(PIM)	Capital	0	821	1,242	0		
	Charges to Clearing	37,490	48,283	36,867	77,111		
	Fuel & Purch Pwr	0	0	2,336	0		
	O&M	80,185	76,565	86,796	76,501	(A)	
Grand Total		117,675	125,669	127,241	153,612		524,197
Hono Stn Maint	Billable	0	0	0	0		
(PIN)	Capital	71,064	17,905	64,626	0		
	Charges to Clearing	73,312	57,933	80,159	49,025		
	Fuel & Purch Pwr	0	0	27,368	0		
	O&M	355,758	417,904	370,889	542,320	(A)	

PRODUCTION DEPARTMENT ONLY - DIRECT LABOR
RA = PI@ ONLY
(Expense Elements 150 and 155)

Resp Area	Acct Group	2002	2003	2004	2005		Total Labor
Grand Total		500,134	493,742	543,042	591,345		2,128,263
Operations Admin (PIO)	Billable	0	0	0	0		
	Capital	0	0	0	0		
	Charges to Clearing	60,396	20,250	55,464	68,811		
	Fuel & Purch Pwr	0	0	4,296	0		
	O&M	21,513	17,818	11,273	19,438	(A)	
Grand Total		81,909	38,068	71,033	88,249		279,259
Planning (PIP)	Billable	2,289	5,496	1,680	0		
	Capital	22,934	9,182	324	77,831		
	Charges to Clearing	95,453	101,910	114,234	160,460		
	Deferred Debit	(366)	0	0	0		
	O&M	653,400	789,243	753,809	1,147,858	(A)	
Grand Total		773,710	905,831	870,047	1,386,149		3,935,737
PS Tech Solutions (PIR)	Billable	0	0	0	0		
	Capital	0	0	0	0		
	Charges to Clearing	1,119	0	0	0		
	Fuel & Purch Pwr	0	0	0	0		
	O&M	21,211	0	0	0		
Grand Total		22,330	0	0	0		22,330
Material/Stores (PIS)	Billable	81,100	0	0	0		
	Capital	0	0	0	0		
	Charges to Clearing	0	0	0	0		
	Fuel & Purch Pwr	0	0	0	0		
	O&M	0	0	0	0		
Grand Total		81,100	0	0	0		81,100
Travel Maint (PIT)	Billable	32,795	26,898	1,761	0		
	Capital	861,058	793,800	1,240,766	1,335,252		
	Charges to Clearing	184,359	201,628	186,507	227,850		
	Fuel & Purch Pwr	0	0	41,943	0		
	O&M	3,609,764	3,686,260	3,707,141	4,233,489	(A)	
Grand Total		4,687,976	4,708,586	5,178,118	5,796,591		20,371,271
Waiau Stn Oper (PIW)	Billable	0	0	0	0		
	Capital	0	0	2,443	0		
	Charges to Clearing	238,917	232,173	287,630	333,343		
	Fuel & Purch Pwr	60,759	66,530	68,655	0		
	O&M	3,140,712	3,368,651	3,612,263	4,125,814	(A)	
Grand Total		3,440,388	3,667,354	3,970,991	4,459,157		15,537,890
Waiau Stn Maint (PIX)	Billable	984	0	156	0		
	Capital	212,291	307,912	315,816	84,379		
	Charges to Clearing	153,110	155,288	180,501	175,884		
	Fuel & Purch Pwr	0	0	17,445	0		
	O&M	1,256,339	1,052,622	1,406,820	2,282,448	(A)	
Grand Total		1,622,724	1,515,822	1,920,738	2,542,711		7,601,995
TOTAL ALL RAS		18,169,990	17,976,816	19,621,619	23,207,683		78,976,108

(A) - Production RA O&M Expense agrees with direct labor cost provided in CA-IR-1, Attachment 3, Page 1 of 1 and CA-IR-1, Attachment 4, Page 1, except for RA PIA.

PIA Dir Lab CA-IR-1	182,702
RA Lab (above)	207,215
Difference	(24,513) O&M cost charged to WAIHO 886 A&G E

:ODUCTION DEPARTMENT ONLY - DIRECT LABOR
, = PI@ ONLY
kpense Elements 150 and 155)

Acct Group	2002	%	2003	%	2004	%	2005	%	2002 - 2005 Total Labor	%
ble	255,344	1%	144,592	1%	123,313	1%	149,958	1%	673,207	1%
ital	1,350,744	7%	1,232,396	7%	1,806,307	9%	1,595,917	7%	5,985,364	8%
rges to Clearing	1,481,125	8%	1,283,149	7%	1,614,291	8%	1,889,702	8%	6,268,267	8%
& Purch Pwr	277,076	2%	249,838	1%	378,836	2%	181,673	1%	1,087,423	1%
erred Debit	(366)	0%	0	0%	0	0%	0	0%	(366)	0%
M	14,806,067	**82%**	15,066,841	**84%**	15,698,872	**80%**	19,390,433	**83%**	64,962,213	**82%**
AL	18,169,990	100%	17,976,816	100%	19,621,619	100%	23,207,683	100%	78,976,108	100%

ES:
ct Group - Capital - includes both capital addition cost as well as the cost for removal work. Cost is predominately for capital addition.
ct Group - Fuel & Purch Pwr - cost is treated as expense.

CA-IR-172

Ref: HECO Response to CA-IR-1, Production O&M labor cost projections.

For each RA containing production department employees that are paid for overtime, please provide the following information on a RA and total Company basis:

a. The hours of test year projected overtime and the related percentage of straight time hours that such overtime represents.

b. Comparable actual overtime hours and percentages for each of the last three calendar years (i.e., 2002, 2003 and 2004).

c. Explanations of causes for observed differences or trends between projected test year overtime levels and the comparable historical levels.

d. Describe if/why the proposed staffing increases in RAs IH, IL, IT, IX do not substantially reduce or eliminate the historical levels of overtime compensation in these RAs.

HECO Response:

a. Please refer to pages 4 and 5 showing the Production O&M Department overtime and straight time hours by RAs for recorded years 2002, 2003 and 2004, and projected year 2005.

b. See a. above.

c. Comparing the historical levels of overtime for years 2002, 2003 and 2004 clearly shows the increase in overtime over the years. As explained in HECO T-6 customer demand has increased the operating time of the peaking and cycling units. In addition, aging units are being run harder with less operating reserve margin for required maintenance. This trend is expected to continue into the foreseeable future. Actual overtime trends and rates for specific RA's have increased to the point where staffing increases were forecasted to manage operating and maintenance demands.

d. Discussion on the overtime rates for the specific RA's identified are provided below.

PIH – PIH is the RA for Honolulu Station operators. The overtime rates for PIH are 21% in

2002, 24% in 2003, 32% in 2004, and projected 9% in 2005. This is considered to be a significant reduction in overtime due to the increase in staff required for 24x7 operation of Honolulu units 8&9. Some amount of overtime is necessary due to the fact that the largest increase to the Honolulu operations staff are bargaining unit operators that are managed in

[redacted]

overtime rate for PIH of 9% is considered reasonable.

PIL - PIL is the RA for Kahe Station maintenance. The overtime rates for PIL are 19% in

extended days, and frequently on multiple unit outages to minimize generating unit down time. Similar to the other RA's above, PIT is comprised mainly of bargaining unit trades and craft employees. The forecasted overtime rate for PIT of 21% is considered reasonable.

PIX - PIX is the RA for Waiau Station maintenance. The overtime rates for PIX are 18% in 2002, 19% in 2003, 29% in 2004 and projected 10% in 2005. This is considered to be a significant reduction in overtime due to the increase in staff required for the night shift maintenance crew. Much of the actual overtime was attributed to unscheduled and scheduled maintenance outside normal business hours. Some amount of overtime is necessary due to the fact that the largest increase in the night shift maintenance crew are bargaining unit trades and crafts employees that are managed in accordance with the IBEW Local 1260 Collective Bargaining Agreement. The forecasted overtime rate for PIX of 10% is considered reasonable.

PIW – The CA inadvertently left out PIW. PIW is the RA for Waiau Operations. The overtime rates for PIH are 21% in 2002, 26% in 2003, 24% in 2004, and projected 19% in 2005. While the 2005 projected overtime rate is lower than actual overtime rates in previous years, it's not as significant when calculated based on the total Waiau operations staffing count because Waiau Station is staffed to operate 8 generating units as compared to Honolulu's 2 generating units. The staffing level increase forecasted in 2005 impacts two of the eight generating units. The forecasted overtime rate for PIH of 19% is considered reasonable on the basis that the station has the oldest and most diverse mix of generating units with 4 cycling steam units, 2 base loaded units and 2 combustion turbines.

Hawaiian Electric Company Inc.
Rate Case - Test Year 2005
Labor Overtime

RA	RA Desc	Overtime Hours	Straight Time Hours	Proportion OT/ST Hrs %
2002 Actual				
PIB	Admin-PS O&M	0	11,310	0%
PIH	Honolulu Stn Oper	6,325	29,696	21%
PIK	Kahe Stn Oper	15,072	101,284	15%
PIL	Kahe Stn Maint	8,669	46,533	19%
PIM	Maintenance Admin	0	3,680	0%
PIN	Honolulu Stn Maint	1,610	13,809	12%
PIO	Operations Admin	0	1,720	0%
PIP	Planning	10	20,903	0%
PIT	Traveling Maintenance	27,854	116,978	24%
PIW	Waiau Stn Oper	19,133	90,429	21%
PIX	Waiau Stn Maint	7,467	42,090	18%
TOTAL		86,140	478,432	18%
2003 Actual				
PIB	Admin-PS O&M	15	11,417	0%
PIH	Honolulu Stn Oper	7,233	30,287	24%
PIK	Kahe Stn Oper	12,819	107,094	12%
PIL	Kahe Stn Maint	9,716	48,881	20%
PIM	Maintenance Admin	0	3,762	0%
PIN	Honolulu Stn Maint	1,425	14,004	10%
PIO	Operations Admin	0	837	0%
PIP	Planning	73	25,149	0%
PIT	Traveling Maintenance	26,682	116,257	23%
PIW	Waiau Stn Oper	23,641	92,184	26%
PIX	Waiau Stn Maint	7,397	38,219	19%
TOTAL		89,001	488,091	18%
2004 Actual				
PIB	Admin-PS O&M	5	12,830	0%
PIH	Honolulu Stn Oper	9,489	30,109	32%
PIK	Kahe Stn Oper	16,288	101,372	16%
PIL	Kahe Stn Maint	10,977	44,188	25%
PIM	Maintenance Admin	0	3,699	0%
PIN	Honolulu Stn Maint	1,997	13,714	15%
PIO	Operations Admin	0	1,576	0%
PIP	Planning	0	24,611	0%
PIT	Traveling Maintenance	34,316	108,302	32%
PIW	Waiau Stn Oper	22,760	96,693	24%
PIX	Waiau Stn Maint	11,812	40,713	29%
TOTAL		107,644	477,807	23%

Hawaiian Electric Company Inc.
Rate Case - Test Year 2005
Labor Overtime

RA	RA Desc	Overtime Hours	Straight Time Hours	Proportion OT/ST Hrs %
2005 Budget				
PIB	Admin-PS O&M	1,177	19,353	6%
PIH	Honolulu Stn Oper	4,762	50,593	9%
PIK	Kahe Stn Oper	17,139	118,674	14%
PIL	Kahe Stn Maint	7,944	73,101	11%
PIM	Maintenance Admin	641	4,321	15%
PIN	Honolulu Stn Maint	1,632	17,225	9%
PIO	Operations Admin	183	1,934	9%
PIP	Planning	6,608	43,526	15%
PIT	Traveling Maintenance	34,556	164,190	21%
PIW	Waiau Stn Oper	25,446	133,992	19%
PIX	Waiau Stn Maint	7,099	72,065	10%
TOTAL		107,187	698,974	15%

2005 Budget - Breakdown of Straight Time Hours

		O&M Hrs	*All Oth Hrs*	*Total*
PIB	Admin-PS O&M	12,944	6,409	19,353
PIH	Honolulu Stn Oper	45,649	4,944	50,593
PIK	Kahe Stn Oper	108,885	9,789	118,674
PIL	Kahe Stn Maint	67,618	5,483	73,101
PIM	Maintenance Admin	2,079	2,242	4,321
PIN	Honolulu Stn Maint	15,801	1,424	17,225
PIO	Operations Admin	426	1,508	1,934
PIP	Planning	35,608	7,918	43,526
PIT	Traveling Maintenance	120,284	43,906	164,190
PIW	Waiau Stn Oper	123,649	10,343	133,992
PIX	Waiau Stn Maint	64,666	7,399	72,065
TOTAL		597,609	101,365	698,974

Agrees with labor hours reported in response to CA-IR-1, except for RA PIP which has a difference of 186 hours. Difference represents less than .1% of the total O&M hours.

CA-IR-173

Ref: HECO Response to CA-IR-1, HECO T-6, Attachment 5, Production staffing projections.

For each new position that did not exist on December 31, 2004, please provide complete copies of all internal analyses, projections, workpapers, reports, correspondence and other documents prepared in connection with the solicitation of management approval for the new position and all management review of such staffing proposal(s).

HECO Response:

Excerpts from an "Oahu Electricity Situation" executive presentation given to the Commission and the CA staff regarding the anticipated generation shortfall due to rapid load growth is provided below. Senior management approved the increase as part of a broader capacity shortfall mitigation plan. The impact to staffing levels include increase staffing to support increasing the availability of

CA-IR-174

Ref: HECO Response to CA-IR-1, HECO T-6, Attachments 3A through 3I and Attachments 4A through 4E, Labor Hours Projection.

Please confirm the following information regarding projected test year production labor

[redacted]

and costs:

a. HECO has assumed that each authorized position will be filled throughout the test year, and that no vacancies will exist during 2005.

b. HECO has assumed that each new position has been filled as of January 1, 2005, even though many of such new positions have not yet been authorized by management or filled.

c. HECO has historically experienced a certain level of ongoing vacancies within its authorized staffing levels, due to retirements and resignations that cannot be immediately re

December, 2004, one (1) Fuel Pipeine Maintenance Specialist and two (2) O&M Engineers are in the interview and selection process.

c. While HECO has historically experienced a certain level of ongoing vacancies within its authorized staffing levels due to retirements, resignations and occasional terminations, the rapid increase in peak demand and the full utilization of an aging fleet of generating units to meet the demand requirements into the foreseeable future requires a higher staffing level in key areas. Timing gaps created from the time a position was vacated to the time it was filled were primarily caused by insufficient lead time and time required to initiate the hiring process. Due to the need to maintain staffing levels as close to the authorized staffing level as possible, several process changes were implemented in 2004 and 2005. First, approvals to fill existing and anticipated (i.e., future retirements) vacancies of existing positions within the authorized staffing level have been stream lined by delegating approvals to the VP of Power Supply. This shortens the approval process and thus reduces the time required to fill vacancies. Second, retirement surveys are conducted on an informal basis to better anticipate future retirements and allow the initiation of the hiring process much earlier to minimize vacancy gaps. This process change creates an overlap as opposed to a gap and allows critical knowledge transfer to take place. The amount of overlap will differ for each position being vacated. As of March 25, 2005, four (4) trades and craft employees and (5) operators have indicated their retirement dates. Except for the Electrician noted in the table below, all requisitions to fill the vacancies have been submitted and approved. The Electrician position is expected to be approved in early April. The table below shows the specific positions, retirement dates and vacancy status. Third, HECO has been successful in

attracting applicants in today's tough labor market. The overlap will temporarily increase staffing levels beyond the authorized number until the incumbent retires.

Position	Retirement Date	Approval Status	Hiring Status
T&C – Welder	May, 2005	Approved	External ad on 3/27/05
T&C - Crane Operator	November, 2005	Approved	Interviews completed. Selection in April.
T&C – Electrician	November, 2005	Requisition submitted	Pending approval
T&C – Technician	December, 2005	Approved	External ad on 3/27/05
Operator – Waiau	June, 2005	Approved	Applicant testing in progress
Operator – Waiau	December, 2005	Approved	Applicant testing in progress
Operator – Hon	December, 2005	Approved	Applicant testing in progress
Operator – Hon	December, 2005	Approved	Applicant testing in progress
Operator – Kahe	July, 2005	Approved	Applicant testing in progress

d. The labor estimates in the 2005 test year assume that all vacancies are filled for the full 12 months. The estimates are reasonable for ratemaking purposes in that the majority of the estimates are based on increasing the organization size due to the need to establish 24x7 operation on H8&9 and W3&4, as well as increasing the maintenance staffing level to establish off-peak maintenance and address more work. Other additions to the staff include a Technical Trainer, additional Resource Planners, Planning Coordinators, Operations and O&M Engineers and an Information Specialist. With regard to existing vacancies attributed to retirements, voluntary terminations, and involuntary terminations, vacancies attributed to retirements make up the highest number, averaging 10 per year since 2000 (10 in 2004, 5 in 2003, 11 in 2002, 9 in 2001, and 14 in 2000). As discussed in c. above, steps are being

taken to actively survey retirement plans for those that are eligible, and to factor the time required to fill a vacancy such that new replacements can be brought on board before the incumbent separates from the Company. This practice has been initiated in 2005, and is intended to offset the vacancy gaps created in the past while creating sufficient overlap for knowledge transfer. Where vacancies exist, offsetting costs are incurred through higher levels of overtime and cost for outside services.

CA-IR-175

Ref: HECO Response to CA-IR-1, HECO T-6, Part e.

According to the response, "[b]acklog of work continues to increase as the units and associated infrastructure ages." Please provide the following information:

a. Identify and describe each measure of work volumes and work "backlog" that is tracked by management.

b. Explain which production department work elements are discretionary or deferrable and identify which can be added to the "backlog of work" without negatively impacting

item will, or will not, impact service reliability, safety, compliance, etc. Most of the unit-specific backlog items require a unit shutdown to gain access to the particular piece of equipment and are therefore performed during planned, maintenance, or forced outages. When a shutdown opportunity arises, items from the backlog list are reviewed and selected based on available resources, outage duration, and future potential impacts on safety, compliance and/or reliability.

With regard to infrastructure maintenance, the scope and breadth of infrastructure and structural maintenance and repairs are increasing with the age of the power plants. Items that previously required inspection and monitoring are requiring maintenance and repairs as they age. A prioritized approach is used to determine which items are done in any given year. Similar to the generating units, maintenance and repair requirements are dynamic and items that start out as not having an immediate or near term negative impact on safety or reliability or meeting compliance requirements eventually become a high priority item. For example, the Kahe Pond 1A cleaning, discussed in CA-IR-188, was originally planned and budgeted for 2002, and was rescheduled to start in 2005 and 2006, due to additional proposals and technologies that were offered by potential contractors. Work commenced in 2005 after overcoming initial technical difficulties with the chosen technology. Please refer to CA-IR-188 for the reasons behind rescheduling the work to the 2005/2006 time frame.

c. Not applicable

d. Please refer to HECO response to CA-IR-48, g.

e. Please refer to HECO response to CA-IR-48, g.

CA-IR-176

Ref: HECO T-6, Page 23, line 11, HECO-619 and HECO-620.

According to the testimony, "[t]he increase between 2003 Actual and 2005 test year is mainly attributed to existing vacancies from retirements at the end of 2003, and an increase in operations staffing level to support 24x7 availability of Honolulu Units 8&9, and Waiau Units 3&4." Please provide the following information:

a. State whether the Company conducted any studies of the optimal staffing plan for production operations.

   1. If yes, provide complete copies of all such studies.

   2. If no, please explain how HECO determined the staffing requirements to support the statement cited above.

b. Provide copies of all calculations, workpapers, analyses, projections and other documents

HECO Response:

a. No, a study was not necessary to determine the level of staffing required to increase availability of Honolulu Units 8&9 and Waiau Units 3&4, from 2 shifts, 5 days per week to 3 shifts, 7 days per week (24x7). The staffing levels were based on the types of operators required to man an extra shift at H8&9 and W3&4.

b. There are no calculations, workpapers, analyses, projections or other documents justifying the cost effectiveness of increasing operations staffing to support 24x7 operations of H8&9 and W3&4 other than labor cost impacts based on staffing numbers. The need to transition to 24x7 was driven by the need to expand the availability of the impacted units due to growing demand, aging units, etc. The consistently high overtime rates, cycling unit service hours, etc., all indicate the need for 24x7 operation of all available HECO units.

c. Overtime percentages are based on hours, not cost. The treatment of overtime hours and percentages in the test year for each production operations RA, relative to historical overtime percentages per HECO-620 is provided in HECO's response to CA-IR-172.

d. Explanations are provided in HECO's response to CA-IR-172.

e. Outside services doesn't apply to Operator positions.

f. The updated position status is included in response to CA-IR-48, pages 10 through 16.

g. The backlog response provided in CA-IR-48g. and the listing provided in CA-IR-48 pages 17 through 34 does not apply to Operations as it is not Operation's responsibility to replace and/or repair equipment, controls, structures, etc. Operations support the maintenance effort by providing system isolation, tagging, and testing support to maintenance trades and craft personnel that actually perform the work.

CA-IR-177

Ref: HECO T-6, Page 28, Line 23, HECO-623 and HECO-625.

According to the testimony, "[t]he increase between the 2003 Actual and test year 2005 is mainly attributed to existing vacancies from retirements at the end of 2003, and an increase in maintenance staffing level to support night shift maintenance crews at Kahe and Waiau Power Plants to perform off-peak maintenance, and higher volumes of work attributed to concurrent and back-to-back scheduled and unscheduled outages." Please provide the following information:

a. State whether the Company conducted any studies of the optimal staffing level for production maintenance operations.

   1. If affirmative, provide complete copies of all such studies.

   2. If no, please explain how HECO arrived at the conclusion made in the above statement, identifying all information relied upon.

b. Provide copies of all calculations, workpapers, analyses, projections and other documents supportive of the cost effectiveness of HECO's decision to support night shift maintenance crews in the proposed manner.

c. Explain and quantify the treatment of overtime hours, percentages and costs in the test year for each production operations RA, relative to historical overtime percentages per HECO-625.

d. Explain and reconcile increased staffing with the proposed versus historical levels of overtime for production department maintenance personnel, indicating the extent to which "avoided" overtime costs in the test year projections are available to "pay for" increased staffing levels in such projections.

e. Explain and reconcile increased staffing with the proposed versus historical levels of outside

HECO Response:

a. Please refer to HECO's response to CA-IR-48 (a).

b. Please refer to HECO's response to CA-IR-48 (b).

c. Please refer to HECO's response to CA-IR-48 (c) and CA-IR-172.

d. Please refer to HECO's response to CA-IR-48 (d).

e. Please refer to HECO's response to CA-IR-48 (e).

f. Please refer to HECO's response to CA-IR-48 (f).

g. Please refer to HECO's response to CA-IR-48 (g).

CA-IR-178

Ref: HECO-618 Other Production Operations Expense "Labor."

Please provide the following information for each of the years shown:

a. Recorded actual direct labor hours charged to Other Production Operations expense accounts, by NARUC Account, for each year 2000, 2001, 2002, 2003 and 2004.

b. Comparable projected 2005 Test Year direct labor hours charged to Other Production Operations expense accounts, by NARUC Account.

c. An explanation of each known material change in operations or scope of work that is expected to contribute to the anticipated shifts in direct labor hours charged to operations expenses by Account.

HECO Response:

a. Please refer to page 2 showing Other Production O&M direct labor hours for Operations and for Maintenance, by NARUC Account, for years 2000-2004.

b. Please refer to page 2 showing Other Production O&M direct labor hours for Operations and for Maintenance, by NARUC Account, for test year 2005.

c. Please refer to page 3 for explanation of accounts with material changes in direct labor hours. In support of the material changes, 502 and 505 NARUC (Prime) Account description per the NARUC Uniform System of Accounts is shown on pages 4 – 7.

HAWAIIAN ELECTRIC COMPANY, INC.
RATE CASE - TEST YEAR 2005
LABOR HOURS

	FY00	FY01	FY02	FY03	FY04	TY 05	
PRODUCTION OPERATION-							
500010 OPER SUPV&ENG HONO	483	468	82	0	0	0	
500020 OPER SUPV&ENG WAIAU	9,083	10,434	10,088	7,679	6,004	13,814	
500030 OPER SUPV&ENG KAHE	6,380	6,370	2,165	1,168	1,941	2,096	
502010 STEAM EXP HONO	18,266	18,277	16,322	14,897	16,369	23,571	A
502020 STEAM EXP WAIAU	49,959	48,062	50,355	51,186	52,171	69,381	A
502030 STEAM EXP KAHE	58,443	52,669	49,807	52,096	51,261	55,581	
505010 ELEC EXP-HONO	16,558	15,641	14,138	13,520	15,301	22,425	A
505020 ELEC EXP-WAIAU	45,214	43,725	46,558	47,864	49,103	59,649	A
505030 ELEC EXP-KAHE	46,897	47,965	47,422	49,811	48,147	52,338	
506010 MISC STM PWR EXP	4,537	5,787	5,261	5,650	5,082	5,860	
506020 MISC STM PWR EXP	13,133	17,633	23,120	19,712	26,606	20,937	
506030 MISC STM PWR EXP	22,908	24,356	27,527	24,763	22,398	22,519	
546 OPR SUPR/ENG OTH PRD	0	0	0	0	0	3,860	
548 GEN EXP-OTH PROD	38	0	0	4	16	0	
549 MISC EXP-OTH PROD	0	0	0	0	479	1,894	
557 OTH PWR SUPPLY EXP	9,352	10,663	8,885	8,356	9,440	9,393	
	301,251	302,050	301,730	296,706	304,318	363,318	
PRODUCTION MAINTENANCE-							
510010 MAINT SUPV&ENG HONO	37	11	17	103	0	35	
510020 MAINT SUPV&ENG WAIAU	162	134	91	159	113	70	
510030 MAINT SUPV&ENG KAHE	135	84	41	3,117	2,078	470	
511010 MAINT STRUCT HONO	3,620	3,259	4,045	4,122	4,147	3,494	
511020 MAINT STRUCT WAIAU	7,370	7,537	7,979	5,245	6,839	11,554	
511030 MAINT STRUCT KAHE	10,513	8,695	8,189	6,140	6,141	8,360	
512010 MAINT BLR&FO PLT HON	11,288	6,765	9,235	30,392	5,994	8,254	B
512020 MAINT BLR&FO PLT WAI	50,868	51,595	37,675	35,739	57,756	65,733	B
512030 MAINT BLR&FO PLT KAH	44,750	49,746	69,171	43,208	53,562	84,566	B
513010 MAINT ELEC PLT HONO	5,553	3,906	9,426	42,149	2,684	5,406	B
513020 MAINT ELEC PLT WAIAU	38,327	24,732	26,836	22,734	28,754	38,256	B
513030 MAINT ELEC PLT KAHE	27,712	41,636	34,690	24,983	28,233	47,316	B
514010 MAINT MISC PLT HONO	3,301	2,133	2,229	2,713	3,065	6,543	
514020 MAINT MISC PLT WAI	6,182	6,485	8,400	6,201	8,048	18,037	C
514030 MAINT MISC PLT KAHE	16,445	21,037	20,599	18,236	15,036	19,271	
551 MAINT SUPR/ENG-OTH PRD	0	0	0	0	132	912	
552 M STRUC-OTH PRD	144	103	36	46	326	0	
553 M ELEC PLT-OTH PROD	776	9,510	852	499	9,983	486	
554 M MISC PLT-OTH PROD	0	0	0	0	4	0	
	227,183	237,368	239,511	245,786	232,895	318,763	
TOTAL	528,434	539,418	541,241	542,492	537,213	682,081	

NOTE: 2005 HOURS AGREE WITH CA-IR-1, HECO T-6, ATTACHMENT 1, PAGE 1, LABOR HOURS AND DIRECT LABOR BY RA.

Explanation of material changes in hours-

A - Increase in these accounts is due to the need for more Operator staffing to support 24x7 availability of the units. This is a change from the past staffing of16x5 operation to operate 24x7, not from a specific change in operation or scope of work. The equipment and systems on which work is performed by the Operators to ensure continued operation of the units is defined in NARUC Uniform Systems of Accounts. See pages 4 - 6 for copies of NARUC pages for accounts 502 and 505.

B - The 2005 increase in these accounts is primarily due to staffing for night shift maintenance crews. The change in annual hours from year to year is also a result of the actual mix of unit overhaul and outages. For example, in 2003 Honolulu 8 & 9 were overhauled and therefore, a greater amount of maintenance labor resources, primarily RA IT (Travel) was assigned to these unit overhauls. This is a change in available maintenance manhours to support a greater workload and is not from a specific change in type of maintenance activity or scope of work. The equipment and systems on which work is performed by the Maintenance staff to ensure continued operation of the units is defined in NARUC Uniform System of Accounts. See pages 7 - 12 for copies of the NARUC pages for accounts 512 and 513.

C - The 2005 increase in this account is primarily due to staffing increase in RA PIP, Planning Division to support higher workload. In 2005, two Resource Planners and one Planning/Project Coordinator were added. See CA-IR-48 page 13 for 2005 test year staffing.

4. Moving of fuel in storage and transferring fuel from one station to another.
5. Handling from storage or shipping facility to first bunker, hopper, bucket, tank or holder of boiler-house structure.
6. Operation of mechanical equipment, such as locomotives, trucks, cars, boats, barges, cranes, etc.

Materials and Expenses:

7. Operating, maintenance and depreciation expenses and ad valorem taxes on utility-owned transportation equipment used to transport fuel from the point of acquisition to the unloading point.
8. Lease or rental costs of transportation equipment used to transport fuel from the point of acquisition to the unloading point.
9. Cost of fuel including freight, switching, demurrage and other transportation charges.
10. Excise taxes, insurance, purchasing commission and similar items.
11. Stores expenses to extent applicable to fuel.
12. Transportation and other expenses in moving fuel in storage.
13. Tools, lubricants and other supplies.
14. Operating supplies for mechanical equipment.
15. Residual disposal expenses less any proceeds from sale of residuals.

Note.—Abnormal fuel handling expenses occasioned by emergency conditions shall be charged to expense as incurred.

502. Steam Expenses.

This account shall include the cost of labor, materials used and expenses incurred in production of steam for electric generation. This includes all expenses of handling and preparing fuel beginning at the point where the fuel enters the first boiler plant bunker, hopper, tank or holder of the boiler-house structure.

ITEMS

Labor:

1. Supervising steam production.
2. Operating fuel conveying, storage, weighing and processing equipment within boiler plant.
3. Operating boiler and boiler auxiliary equipment.
4. Operating boiler feed water purification and treatment equipment.
5. Operating ash-collecting and disposal equipment located inside the plant.
6. Operating boiler plant electrical equipment.
7. Keeping boiler plant log and records and preparing reports on boiler plant operation.
8. Testing boiler water.

ITEMS

Labor:

1. Supervising electric production.
2. Operating turbines, engines, generators and exciters.
3. Operating condensers, circulating water systems and other auxiliary apparatus.
4. Operating generator cooling system.
5. Operating lubrication and oil control system, including oil purification.
6. Operating switchboards, switch gear and electric control and protective equipment.
7. Keeping electric plant log and records and preparing reports on electric plant operations.
8. Testing, checking and adjusting meters, gauges, and other instruments, relays, controls and other equipment in the electric plant.
9. Cleaning electric plant equipment when not incidental to maintenance work.
10. Repacking glands and replacing gauge glasses.

Materials and Expenses:

11. Lubricants and control system oils.
12. Generator cooling gases.
13. Circulating water purification supplies.
14. Cooling water purchased.
15. Motor and generator brushes.

506. Miscellaneous Steam Power Expenses.

This account shall include the cost of labor, materials used and expenses incurred which are not specifically provided for or are not readily assignable to other steam generation operation expense accounts.

Labor:

1. General clerical and stenographic work.
2. Guarding and patrolling plant and yard.
3. Building service.
4. Care of grounds including snow removal, cutting grass, etc.
5. Miscellaneous labor.

Materials and Expenses:

6. General operating supplies, such as tools, gaskets, packing waste, gauge glasses, hose, indicating lamps, record and report forms, etc.
7. First-aid supplies and safety equipment.
8. Employees' service facilities expenses.

9. Building service supplies.
10. Communication service.
11. Miscellaneous office supplies and expenses, printing and stationery.
12. Transportation expenses.
13. Meals, traveling and incidental expenses.
14. Research and development expenses.

507. Rents.

This account shall include all rents of property of others used, occupied or operated in connection with steam power generation. (See operating expense instruction 3.)

Maintenance

510. Maintenance Supervision and Engineering.

This account shall include the cost of labor and expenses incurred in the general supervision and direction of maintenance of steam generation facilities. Direct field supervision of specific jobs shall be charged to the appropriate maintenance account. (See operating expense instruction 1.)

511. Maintenance of Structures.

This account shall include the cost of labor, materials used and expenses incurred in the maintenance of steam structures, the book cost of which is includible in account 311. Structures and Improvements. (See operating expense instruction 2.)

512. Maintenance of Boiler Plant.

A. This account shall include the cost of labor, materials used and expenses incurred in the maintenance of steam plant, the book cost of which is includible in account 312, Boiler Plant Equipment. (See operating expense instruction 2.)

B. For the purpose of making charges hereto and to account 513, Maintenance of Electric Plant, the point at which steam plant is distinguished from electric plant is defined as follows:

a. Inlet flange of throttle valve on prime mover.
b. Flange of all steam extraction lines on prime mover.
c. Hotwell pump outlet on condensate lines.
d. Inlet flange of all turbine-room auxiliaries.
e. Connection to line side of motor starter for all boiler-plant equipment.

513. **Maintenance of Electric Plant.**

This account shall include the cost of labor, materials used and expenses incurred in the maintenance of electric plant, the book cost of which is includible in account 313, Engines and Engine-Driven Generators, account 314, Turbogenerator Units, and account 315, Accessory Electric Equipment. (See operating expense instruction 2 and paragraph B of account 512.)

514. **Maintenance of Miscellaneous Steam Plant.**

This account shall include the cost of labor, materials used and expenses incurred in maintenance of miscellaneous steam generation plant, the book cost of which is includible in account 316, Miscellaneous Power Plant Equipment. (See operating expense instruction 2.)

B. Nuclear Power Generation

Operation

517. **Operation Supervision and Engineering.**

This account shall include the cost of labor and expenses incurred in the general supervision and direction of the operation of nuclear power generating stations. Direct supervision of specific activities, such as fuel handling, reactor operations, generator operations, etc., shall be charged to the appropriate account. (See operating expense instruction 1.)

518. **Nuclear Fuel Expense.**

A. This account shall be debited and account 120, Accumulated Provision for Amortization of Nuclear Fuel Assemblies, credited for the amortization of the net cost of nuclear fuel assemblies used in the production of energy. The net cost of nuclear fuel assemblies subject to amortization shall be the cost of nuclear fuel assemblies plus or less the expected net salvage of uranium, plutonium, and other by-products and unburned fuel. The utility shall adopt the necessary procedures to assure that charges to this account are distributed according to the thermal energy produced in such periods.

B. This account shall also include the costs involved when fuel is leased.

C. This account shall also include the cost of other fuels, used for ancillary steam facilities, including superheat.

D. This account shall be debited or credited as appropriate for significant changes in the amounts estimated as the net salvage value of uranium, plutonium, and other by-products contained in account 157, Nuclear Materials Held for Sale, and the amount realized upon the final disposition of the materials. Significant

312. Boiler Plant Equipment.

This account shall include the cost installed of furnaces, boilers, coal and ash handling and coal preparing equipment, steam and feed water piping, boiler apparatus and accessories used in the production of steam, mercury, or other vapor, to be used primarily for generating electricity.

ITEMS

1. Ash handling equipment, including hoppers, gates, cars, conveyors, hoists, sluicing equipment, including pumps and motors, sluicing water pipe and fittings, sluicing trenches and accessories, etc., except sluices which are a part of a building.
2. Boiler feed system, including feed water heaters, evaporator condensers, heater drain pumps, heater drainers, deaerators, and vent condensers, boiler feed pumps, surge tanks, feed water regulators, feed water measuring equipment, and all associated drives.
3. Boiler plant cranes and hoists and associated drives.
4. Boilers and equipment, including boilers and baffles, economizers, superheaters, soot blowers, foundations and settings, water walls, arches, grates, insulation, blowdown system, drying out of new boilers, also associated motors or other power equipment.
5. Breeching and accessories, including breeching, dampers, soot spouts, hoppers and gates, cinder eliminators, breeching insulation, soot blowers and associated motors.
6. Coal handling and storage equipment, including coal towers, coal lorries, coal cars, locomotives and tracks when devoted principally to the transportation of coal, hoppers, downtakes, unloading and hoisting equipment, skip hoists and conveyors, weighing equipment, magnetic separators, cable ways, housings and supports for coal handling equipment.
7. Draft equipment, including air preheaters and accessories, induced and forced draft fans, air ducts, combustion control mechanisms, and associated motors or other power equipment.
8. Gas-burning equipment, including holders, burner equipment and piping, control equipment, etc.
9. Instruments and devices, including all measuring, indicating, and recording equipment for boiler plant service together with mountings and supports.
10. Lighting systems.
11. Oil-burning equipment, including tanks, heaters, pumps with drive, burner equipment and piping, control equipment, etc.
12. Pulverized fuel equipment, including pulverizers, necessary motors, primary air fans, cyclones and ducts, dryers, pulverized fuel bins, pulver-

ized fuel conveyors and equipment, burners, burner piping, priming equipment, air compressors, motors, etc.

13. Stacks, including foundations and supports, stack steel and ladders, stack brick work, stack concrete, stack lining, stack painting (first), when set on separate foundations, independent of substructure or superstructure of building.
14. Station piping, including pipe, valves, fittings, separators, traps desuperheaters, hangers, excavation, covering, etc., for station piping system, including all steam, condensate, boiler feed and water supply piping, etc., but not condensing water, plumbing, building heating, oil, gas, air piping or piping specifically provided for in account 313.
15. Stoker or equivalent feeding equipment, including stokers and accessory motors, clinker grinders, fans and motors, etc.
16. Ventilating equipment.
17. Water purification equipment, including softeners and accessories, evaporators and accessories, heat exchangers, filters, tanks for filtered or softened water, pumps, motors, etc.
18. Water-supply systems, including pumps, motors, strainers, raw-water storage tanks, boiler wash pumps, intake and discharge pipes and tunnels not a part of a building.
19. Wood fuel equipment, including hoppers, fuel hogs and accessories, elevators and conveyors, bins and gates, spouts, measuring equipment and associated drives.

Note.—When the system for supplying boiler or condenser water is elaborate, as when it includes a dam, reservoir, canal, pipe line, cooling ponds, or where gas or oil is used as a fuel for producing steam and is supplied through a pipe line system owned by the utility, the cost of such special facilities shall be charged to a subdivision of account 311, Structures and Improvements.

313. Engines and Engine Driven Generators.

This account shall include the cost installed of steam engines, reciprocating or rotary, and their associated auxiliaries; and engine driven main generators, except turbogenerator units.

ITEMS

1. Air cleaning and cooling apparatus, including blowers, drive equipment, air ducts not a part of building, louvers, pumps, hoods, etc.
2. Belting, shafting, pulleys, reduction gearing, etc.
3. Circulating pumps, including connections between condensers and intake and discharge tunnels.
4. Cooling system, including towers, pumps, tank, and piping.
5. Condensers, including condensate pumps, air and vacuum pumps, ejectors, unloading valves and vacuum breakers, expansion devices, screens, etc.

6. Cranes, hoists, etc., including items wholly identified with items listed herein.
7. Engines, reciprocating or rotary.
8. Fire-extinguishing systems.
9. Foundations and settings, especially constructed for and not expected to outlast the apparatus for which provided.
10. Generators—main, A.C. or D.C., including field rheostats and connections for self-excited units, and excitation systems when identified with the generating unit.
11. Governors.
12. Lighting systems.
13. Lubricating systems, including gauges, filters, tanks, pumps, piping, motors, etc.
14. Mechanical meters, including gauges, recording instruments, sampling and testing equipment.
15. Piping—main exhaust, including connections between generator and condenser and between condenser and hotwell.
16. Piping—main steam, including connections from main throttle valve to turbine inlet.
17. Platforms, railings, steps, gratings, etc., appurtenant to apparatus listed herein.
18. Pressure oil system, including accumulators, pumps, piping, motors, etc.
19. Throttle and inlet valve.
20. Tunnels, intake and discharge, for condenser system, when not a part of a structure.
21. Water screens, motors, etc.

314. Turbogenerator Units.

This account shall include the cost installed of main turbine-driven units and

6. Cranes, hoists, etc., including items wholly identified with items listed herein.
7. Excitation system, when identified with main generating units.
8. Fire-extinguishing system.
9. Foundations and settings, especially constructed for and not expected to outlast the apparatus for which provided.
10. Governors.
11. Lighting systems.
12. Lubricating systems, including gauges, filters, water separators, tanks, pumps, piping, motors, etc.
13. Mechanical meters, including gauges, recording instruments, sampling and testing equipment.
14. Piping—main exhaust, including connections between turbogenerator and condenser and between condenser and hotwell.
15. Piping-main steam, including connections from main throttle valve to turbine inlet.
16. Platforms, railings, steps, gratings, etc., appurtenant to apparatus listed herein.
17. Pressure oil systems, including accumulators, pumps, piping, motors, etc.
18. Steelwork, specially constructed for apparatus listed herein.
19. Throttle and inlet valve.
20. Tunnels, intake and discharge, for condenser system, when not a part of structure, water screens, etc.
21. Turbogenerators—main, including turbine and generator, field rheostats and electric connections for self-excited units.
22. Water screens, motors, etc.
23. Moisture separators for turbine steam.
24. Turbine lubricating oil (initial charge).

315. Accessory Electric Equipment.

This account shall include the cost installed of auxiliary generating apparatus, conversion equipment, and equipment used primarily in connection with the control and switching of electric energy produced by steam power, and the protection of electric circuits and equipment, except electric motors used to drive equipment included in other accounts. Such motors shall be included in the account in which the equipment with which they are associated is included.

2. Excitation system, including motor, turbine and dual-drive exciter sets and rheostats, storage batteries and charging equipment, circuit breakers,

CA-IR-179

Ref: HECO-622 Other Production Maintenance Expense "Labor."

Please provide the following information for each of the years shown:

a. Recorded actual direct labor hours charged to Other Production Maintenance expense accounts, by NARUC Account, for each year 2000, 2001, 2002, 2003 and 2004.

b. Comparable projected 2005 Test Year direct labor hours charged to Other Production Maintenance expense accounts, by NARUC Account.

c. An explanation of each known material change in operations or scope of work that is expected to contribute to the anticipated shifts in direct labor hours charged to maintenance expenses by Account

HECO Response:

a. Please refer to CA-IR-178, page 2 showing Other Production O&M direct labor hours for Operations and for Maintenance, by NARUC Account, for years 2002-2004.

b. Please refer to CA-IR-178, page 2 showing Other Production O&M direct labor hours for Operations and for Maintenance, by NARUC Account, for test year 2005.

c. Please refer to CA-IR-178, page 3 for explanation of accounts with material changes in direct labor hours. In support of the material changes, 512, 513, 312, 314 and 315 NARUC (Prime) Account description per the NARUC Uniform System of Accounts is shown on CA-IR-178, pages 7-13.

CA-IR-180

Ref: HECO-WP-601, Pages 4 through 7, CA-IR-2, HECO T-6, Attachment 4B; Overhaul Projects.

Please provide the following historical and test year projected information in hard copy and magnetic media (Excel format) on a comparable basis among years:

a. Actual overhaul project summaries for each of the past five calendar years from 2000 through 2004, indicating the Project number and start/completion dates for each active overhaul project by unit/station.

b. Provide total expensed costs (excluding capitalized costs) for each overhaul project listed in your response to subpart (a) of this information request, broken down into the Material, Outside Services and Labor cost types.

c. Compare the total number of overhauls, overhaul project scope and overall expensed costs associated with projected test year overhauls to the incurred expense levels in prior years and explain if and why the test year activity is thought to be reasonable and reflective of normal ongoing expense levels based upon such comparisons.

d. Provide the most current available five-year Overhaul budget, indicating the labor and non-labor budget for each overhaul expected to be conducted in each year.

e. Compare the total number of overhauls, overhaul project scope and overall expensed costs

[redacted]

associated with projected test year overhauls to the anticipated expense levels in future years, as set forth in your response to subpart (d) of this information request, and explain if and why the test year activity level and associated costs are thought to be reasonable and reflective of normal ongoing expense levels based upon such comparisons.

HECO Response:

a. Please refer to the spreadsheet on page 3 in this IR response. Note that totals for 2003 reconciles to CA-IR-41 Attachment 3, totals for 2004 reconciles to CA-IR-42 Attachment 3,

Updates, filed on May 5, 2005.

c. Please refer to part a. above for overhaul cost comparisons over the past 5 years. As discussed in CA-IR-44(a) the 2005 test year overhaul schedule shown at the bottom of HECO-627 was considered a normal overhaul year because it represented the work anticipated to maintain 16 HECO generating units, and took into account the anticipated scheduled outages for IPPs. As shown in HECO-611 and HECO-612, the planned outages from which the forecast was based, and the actual mix of units that were overhauled, may be very different due to the dynamic nature of an island system, aging fleet of generating units, lower reserves resulting in less flexibility, and other factors. Therefore, project variances between years are attributed to the mix of units that are overhauled as each unit is identified as a separate project. Referring to HECO-608, HECO's fleet of 16 generating units are nearly 20 years older since the beginning of the last capacity crunch in the mid to late 80's. Referring to the Grand Total amounts at the bottom of the spreadsheet on page 3, O&M trends over the past five years indicate a significant increase, primarily due to the factors discussed above and in HECO T-6. In each overhaul, more items, rather than less are requiring maintenance due to age and wear and tear on the equipment. The Other Production O&M expense trend from 1986-2004 actual, and in CA-IR-170, page 4, shows an increasing trend over the last approximately 20 years. The trend is expected to increase.

d. There is no five-year Overhaul budget. O&M budgets are developed one to two years into the future. The 2006 O&M forecast is in the process of being developed.

e. Not applicable. See response to part d. above.

Hawai ectric Company, Inc.
Rate C 005
2000 to 2005 Overhaul Projects - Summary

Project #	Project Description	2000 Actual	2001 Actual	2002 Actual	2003 Actual	2004 Actual	HECO T-6	Start Date	Completion Date	Rev 2005 4/08/05	Start Date	Completion Date
P0000043	Waiau 3 January 1999 Overhaul	$2,545	$0	$0	$0	$0	$0	12/02/98	02/02/99	$0	12/02/98	02/02/99
P0000044	Waiau 5 February 1999 Overhaul	$151	$0	$0	$0	$0	$0	02/21/99	04/01/99	$0	02/21/99	04/01/99
P0000012	Kahe 1 April 1999 Overhaul	$4,400	$0	$0	$0	$0	$0	04/19/99	06/21/99	$0	04/19/99	06/21/99
P0000013	Kahe 4 June 1999 Overhaul	$29,314	$262	$0	$0	$0	$0	06/21/99	08/27/99	$0	06/21/99	08/27/99
P0000015	Kahe 6 August 1999 Overhaul	$31,876	$80	$0	$0	$0	$0	09/30/99	12/15/99	$0	09/30/99	12/15/99
P0000142	WAIAU 8 OVERHAUL	$2,350,404	$1,317	$0	$0	$0	$0	01/04/00	03/21/00	$0	01/04/00	03/21/00
P0000140	Kahe 5 Overhaul	$1,708,609	$3,045	$0	$0	$0	$0	05/19/00	07/01/00	$0	05/19/00	07/01/00
P0000139	Kahe 4 Overhaul	$1,510,789	$5,708	$0	($100,869)	$0	$0	07/11/00	08/18/00	$0	07/11/00	08/18/00
P0000141	Waiau 7 Overhaul	$2,794,000	$61,124	$0	$0	$0	$0	09/10/00	11/15/00	$0	09/10/00	11/15/00
P0000137	Honolulu 8 Overhaul	$582,977	$138,479	$0	$0	$0	$0	11/18/00	12/14/00	$0	11/18/00	12/14/00
P0000243	Waiau 6 2001 Overhaul	$239,392	$2,245,310	$0	$0	$0	$0	12/29/00	02/28/01	$0	12/29/00	02/28/01
P0000245	Waiau 9 2001 Overhaul	$0	$310,586	$0	$0	$0	$0	03/26/01	04/24/01	$0	03/26/01	04/24/01
P0000246	Waiau 10 2001 Overhaul	$0	$143,508	$0	$0	$0	$0	04/24/01	05/11/01	$0	04/24/01	05/11/01
P0000244	Waiau 4 2001 Overhaul	$8,638	$1,120,213	$0	$6,654	$18	$0	05/14/01 09/17/01	05/25/01 10/17/01	$0	05/14/01 09/17/01	05/25/01 10/17/01
P0000247	Kahe 2 2001 Overhaul	$0	$1,743,942	$6,363	$107	$0	$0	07/16/01	09/08/01	$0	07/16/01	09/08/01
P0000248	Kahe 3 2001 Overhaul	$0	$3,043,213	$51,307	($51,567)	$398	$0	10/07/01	12/16/01	$0	10/07/01	12/16/01
P0000251	Kahe 1 2002 Overhaul	$0	$129,980	$1,932,260	$9,245	$3,338	$0	01/05/02	02/26/02	$0	01/05/02	02/26/02
P0000520	Kahe 4 Overhaul (2003)	$0	$0	$851,127	$3,658	$3,869	$0	03/02/02	03/30/02	$0	03/02/02	03/30/02
P0000250	Kahe 6 2002 Overhaul	$0	$0	$3,557,057	$1,897	$0	$0	05/04/02	08/09/02	$0	05/04/02	08/09/02
P0000252	Waiau 5 2002 Overhaul	$0	$0	$3,741,703	$1,258,534	$9,325	$0	09/14/02	03/24/03	$0	09/14/02	03/24/03
P0000138	Honolulu 9 Overhaul	$0	$0	$1,007,915	$2,537,334	$0	$0	11/30/02	03/22/03	$0	11/30/02	03/22/03
P0000523	Honolulu 8 Overhaul (2003)	$0	$0	$1,806	$4,900,033	$29,451	$0	04/12/03	12/02/03	$0	04/12/03	12/02/03
P0000522	Waiau 7 Overhaul (2003)	$0	$0	$0	$1,866,027	$25,787	$0	09/10/03	11/03/03	$0	09/10/03	11/03/03
P0000655	Kahe 4 Overhaul (2004)	$0	$0	$0	$1,378,271	$1,118,289	$0	11/25/03	01/26/04	$0	11/25/03	01/26/04
P0000519	Kahe 5 Overhaul (2003)	$0	$0	$10,195	$366,499	$4,221,755	$0	02/01/04	05/14/04	$0	02/01/04	05/14/04
P0000249	Waiau 3 2002 Overhaul	$0	$0	$0	$511	$3,305,215	$0	06/04/04	10/04/04	$0	06/04/04	10/04/04
P0000521	Waiau 8 Overhaul (2003)	$0	$0	$0	$0	$3,452,335	$0	08/20/04	11/02/04	$138,700	08/20/04	11/02/04
P0000937	W9 Major Inspection	$0	$0	$0	$0	$981,919	$1,002,540	10/12/04	in progress	$3,212,500	10/12/04	04/08/05
P0000654	Waiau 6 Overhaul (2004)	$0	$0	$0	$0	$555,314	$0	01/28/05	in progress	$2,036,000	01/28/05	04/19/05
P0000650	Kahe 2 Overhaul (2004)	$0	$0	$0	$0	$94,743	$481,500	-	-	$2,420,200	07/16/05	09/07/05
P0000844	Kahe 6 Overhaul (2005)	$0	$0	$0	$0	$330	$2,890,828	-	-	$2,938,900	05/02/05	07/13/05
P0000845	Kahe 4 Overhaul (2005)	$0	$0	$0	$0	$0	$3,549,685	-	-	$0	2006	2006
P0000846	Kahe 1 Overhaul (2005)	$0	$0	$0	$0	$0	$1,908,691	-	-	$0	2006	2006
P0000847	Waiau 4 Overhaul (2005)	$0	$0	$0	$0	$0	$3,716,919	-	-	$3,775,600	10/01/05	01/16/06
P0000938	W10 Major Inspection	$0	$0	$0	$0	$0	$1,002,540	-	-	$3,664,800	07/25/05	10/13/05
Grand Total		**$9,263,095**	**$8,946,767**	**$11,159,733**	**$12,176,334**	**$13,802,086**	**$14,552,703**			**$18,186,700**		

NOTE: See CA-IR-641 for 2005 adjustment to Production O&M expense due to betterment accounting.

2001 vs. 2000 Variance	($316,328)	-3%
2002 vs. 2001 Variance	$2,212,966	25%
2003 vs. 2002 Variance	$1,016,601	9%
2004 vs. 2003 Variance	$1,625,752	13%
(Heco T-6) 2005 vs. 2004 Variance	$750,617	5%
(Rev 2005 4/08/05) 2005 vs. 2004 Variance	$4,384,614	32%

H...aiian Electric Company, Inc.
Rate Case 2005
2000 to 2005 Overhaul Projects - with Cost Category

Project #	Project Description	Cost Category	2000 Actual	2001 Actual	2002 Actual	2003 Actual	2004 Actual	HECO T-6 TY 2005	Rev 2005 4/8/2005
P0000012	Kahe 1 April 1999 Overhaul	LABOR	$2,060	$0	$0	$0	$0	$0	$0
		MATERIAL	$295	$0	$0	$0	$0	$0	$0
		O/S SVCS	$1,066	$0	$0	$0	$0	$0	$0
		OVERHEADS	$979	$0	$0	$0	$0	$0	$0
P0000012 Total			$4,400	$0	$0	$0	$0	$0	$0
P0000013	Kahe 4 June 1999 Overhaul	LABOR	$920	$0	$0	$0	$0	$0	$0
		MATERIAL	$141	$262	$0	$0	$0	$0	$0
		O/S SVCS	$27,753	$0	$0	$0	$0	$0	$0
		OVERHEADS	$500	$0	$0	$0	$0	$0	$0
P0000013 Total			$29,314	$262	$0	$0	$0	$0	$0
P0000015	Kahe 6 August 1999 Overhaul	LABOR	$1,341	$0	$0	$0	$0	$0	$0
		MATERIAL	$2,474	$0	$0	$0	$0	$0	$0
		O/S SVCS	$27,294	$80	$0	$0	$0	$0	$0
		OVERHEADS	$767	$0	$0	$0	$0	$0	$0
P0000015 Total			$31,876	$80	$0	$0	$0	$0	$0
P0000043	Waiau 3 January 1999 Overhaul	LABOR	$1,262	$0	$0	$0	$0	$0	$0
		MATERIAL	$0	$0	$0	$0	$0	$0	$0
		O/S SVCS	$614	$0	$0	$0	$0	$0	$0
		OVERHEADS	$637	$0	$0	$0	$0	$0	$0
		TRANSPORT	$32	$0	$0	$0	$0	$0	$0
P0000043 Total			$2,545	$0	$0	$0	$0	$0	$0
P0000044	Waiau 5 February 1999 Overhaul	LABOR	$103	$0	$0	$0	$0	$0	$0
		MATERIAL	$0	$0	$0	$0	$0	$0	$0
		O/S SVCS	$0	$0	$0	$0	$0	$0	$0
		OVERHEADS	$48	$0	$0	$0	$0	$0	$0
P0000044 Total			$151	$0	$0	$0	$0	$0	$0
P0000137	Honolulu 8 Overhaul	LABOR	$260,680	$6,470	$0	$0	$0	$0	$0
		MATERIAL	$82,720	$71,748	$0	$0	$0	$0	$0
		O/S SVCS	$150,922	$58,087	$0	$0	$0	$0	$0
		OVERHEADS	$84,434	$2,174	$0	$0	$0	$0	$0
		TRANSPORT	$4,221	$0	$0	$0	$0	$0	$0
P0000137 Total			$582,977	$138,479	$0	$0	$0	$0	$0
P0000138	Honolulu 9 Overhaul	LABOR	$0	$0	$303,331	$782,034	$0	$0	$0
		MATERIAL	$0	$0	$363,462	$480,353	$0	$0	$0
		O/S SVCS	$0	$0	$219,172	$723,120	$0	$0	$0
		OVERHEADS	$0	$0	$121,950	$551,827	$0	$0	$0
P0000138 Total			$0	$0	$1,007,915	$2,537,334	$0	$0	$0
P0000139	Kahe 4 Overhaul	LABOR	$569,044	$0	$0	($19,952)	$0	$0	$0
		MATERIAL	$481,611	$0	$0	($68,122)	$0	$0	$0
		O/S SVCS	$244,773	$5,708	$0	($5,147)	$0	$0	$0
		OVERHEADS	$204,886	$0	$0	($7,374)	$0	$0	$0
		TRANSPORT	$10,475	$0	$0	($274)	$0	$0	$0
P0000139 Total			$1,510,789	$5,708	$0	($100,869)	$0	$0	$0
P0000140	Kahe 5 Overhaul	LABOR	$620,633	$0	$0	$0	$0	$0	$0
		MATERIAL	$536,301	$2,538	$0	$0	$0	$0	$0

vaiian Electric Company, Inc.
e Case 2005
0 to 2005 Overhaul Projects - with Cost Category

Project #	Project Description	Cost Category	2000 Actual	2001 Actual	2002 Actual	2003 Actual	2004 Actual	HECO T-6 TY 2005	Rev 2005 4/8/2005
		O/S SVCS	$316,733	$507	$0	$0	$0	$0	$0
		OVERHEADS	$225,992	$0	$0	$0	$0	$0	$0
		TRANSPORT	$8,950	$0	$0	$0	$0	$0	$0
0140 Total			$1,708,609	$3,045	$0	$0	$0	$0	$0
0141	Waiau 7 Overhaul	LABOR	$875,463	$1,509	$0	$0	$0	$0	$0
		MATERIAL	$710,975	$30,659	$0	$0	$0	$0	$0
		O/S SVCS	$878,198	$27,386	$0	$0	$0	$0	$0
		OTHER	$2,214	$0	$0	$0	$0	$0	$0
		OVERHEADS	$310,260	$560	$0	$0	$0	$0	$0
		TRANSPORT	$16,890	$1,010	$0	$0	$0	$0	$0
0141 Total			$2,794,000	$61,124	$0	$0	$0	$0	$0
0142	WAIAU 8 OVERHAUL	LABOR	$792,322	$0	$0	$0	$0	$0	$0
		MATERIAL	$490,004	$0	$0	$0	$0	$0	$0
		O/S SVCS	$675,199	$1,317	$0	$0	$0	$0	$0
		OVERHEADS	$377,637	$0	$0	$0	$0	$0	$0
		TRANSPORT	$15,242	$0	$0	$0	$0	$0	$0
0142 Total			$2,350,404	$1,317	$0	$0	$0	$0	$0
0243	Waiau 6 2001 Overhaul	LABOR	$94,766	$699,399	$0	$0	$0	$0	$0
		MATERIAL	$83,122	$482,660	$0	$0	$0	$0	$0
		O/S SVCS	$28,500	$813,522	$0	$0	$0	$0	$0
		OVERHEADS	$31,947	$245,357	$0	$0	$0	$0	$0
		TRANSPORT	$1,057	$4,372	$0	$0	$0	$0	$0
0243 Total			$239,392	$2,245,310	$0	$0	$0	$0	$0
0244	Waiau 4 2001 Overhaul	LABOR	$6,145	$452,574	$0	$3,317	$0	$0	$0
		MATERIAL	$343	$372,454	$0	($380)	$0	$0	$0
		O/S SVCS	$0	$105,372	$0	$998	$0	$0	$0
		OVERHEADS	$2,150	$188,538	$0	$2,719	$18	$0	$0
		TRANSPORT	$0	$1,275	$0	$0	$0	$0	$0
0244 Total			$8,638	$1,120,213	$0	$6,654	$18	$0	$0
0245	Waiau 9 2001 Overhaul	LABOR	$0	$163,956	$0	$0	$0	$0	$0
		MATERIAL	$0	$61,668	$0	$0	$0	$0	$0
		O/S SVCS	$0	$21,891	$0	$0	$0	$0	$0
		OVERHEADS	$0	$62,507	$0	$0	$0	$0	$0
		TRANSPORT	$0	$564	$0	$0	$0	$0	$0
0245 Total			$0	$310,586	$0	$0	$0	$0	$0
0246	Waiau 10 2001 Overhaul	LABOR	$0	$104,622	$0	$0	$0	$0	$0
		MATERIAL	$0	($13,461)	$0	$0	$0	$0	$0
		O/S SVCS	$0	$9,982	$0	$0	$0	$0	$0
		OVERHEADS	$0	$41,035	$0	$0	$0	$0	$0
		TRANSPORT	$0	$1,330	$0	$0	$0	$0	$0
0246 Total			$0	$143,508	$0	$0	$0	$0	$0
0247	Kahe 2 2001 Overhaul	LABOR	$0	$603,570	$1,188	$57	$0	$0	$0
		MATERIAL	$0	$488,171	($803)	$0	$0	$0	$0
		O/S SVCS	$0	$419,220	$5,468	$0	$0	$0	$0
		OVERHEADS	$0	$229,349	$510	$50	$0	$0	$0

Hawaiian Electric Company, Inc.
Rate Case 2005
2000 to 2005 Overhaul Projects - with Cost Category

Project #	Project Description	Cost Category	2000 Actual	2001 Actual	2002 Actual	2003 Actual	2004 Actual	HECO T-6 TY 2005	Rev 2005 4/8/2005
		TRANSPORT	$0	$3,632	$0	$0	$0	$0	$0
P0000247 Total			$0	$1,743,942	$6,363	$107	$0	$0	$0
P0000248	Kahe 3 2001 Overhaul	LABOR	$0	$866,282	$14,163	($15,510)	$137	$0	$0
		MATERIAL	$0	$813,549	$25,586	($28,246)	$144	$0	$0
		O/S SVCS	$0	$998,785	$3,599	$0	$0	$0	$0
		OVERHEADS	$0	$362,872	$6,825	($7,811)	$117	$0	$0
		TRANSPORT	$0	$1,725	$1,134	$0	$0	$0	$0
P0000248 Total			$0	$3,043,213	$51,307	($51,567)	$398	$0	$0
P0000249	Waiau 3 2002 Overhaul	LABOR	$0	$0	$0	$258	$901,550	$0	$0
		MATERIAL	$0	$0	$0	$0	$533,462	$0	$0
		O/S SVCS	$0	$0	$0	$0	$1,370,921	$0	$0
		OVERHEADS	$0	$0	$0	$253	$499,271	$0	$0
		TRANSPORT	$0	$0	$0	$0	$11	$0	$0
P0000249 Total			$0	$0	$0	$511	$3,305,215	$0	$0
P0000250	Kahe 6 2002 Overhaul	LABOR	$0	$0	$1,004,340	$0	$0	$0	$0
		MATERIAL	$0	$0	$1,159,617	$0	$0	$0	$0
		O/S SVCS	$0	$0	$982,288	$1,897	$0	$0	$0
		OVERHEADS	$0	$0	$410,812	$0	$0	$0	$0
P0000250 Total			$0	$0	$3,557,057	$1,897	$0	$0	$0
P0000251	Kahe 1 2002 Overhaul	LABOR	$0	$42,842	$645,480	$1,045	$0	$0	$0
		MATERIAL	$0	$49,827	$506,777	$0	$0	$0	$0
		O/S SVCS	$0	$18,116	$444,982	$3,463	$0	$0	$0
		OVERHEADS	$0	$19,195	$322,910	$743	$0	$0	$0
		TRANSPORT	$0	$0	$12,111	$3,994	$3,338	$0	$0
P0000251 Total			$0	$129,980	$1,932,260	$9,245	$3,338	$0	$0
P0000252	Waiau 5 2002 Overhaul	LABOR	$0	$0	$962,539	$285,179	$730	$0	$0
		MATERIAL	$0	$0	$887,447	$526,063	$11	$0	$0
		O/S SVCS	$0	$0	$1,576,168	$231,220	$8,097	$0	$0
		OTHER	$0	$0	$56	$0	$0	$0	$0
		OVERHEADS	$0	$0	$315,493	$205,841	$487	$0	$0
		TRANSPORT	$0	$0	$0	$10,231	$0	$0	$0
P0000252 Total			$0	$0	$3,741,703	$1,258,534	$9,325	$0	$0
P0000519	Kahe 5 Overhaul (2003)	LABOR	$0	$0	$0	$14,349	$1,088,672	$0	$0
		MATERIAL	$0	$0	$10,195	$339,726	$760,779	$0	$0
		O/S SVCS	$0	$0	$0	$0	$1,691,352	$0	$0
		OVERHEADS	$0	$0	$0	$12,424	$680,952	$0	$0
P0000519 Total			$0	$0	$10,195	$366,499	$4,221,755	$0	$0
P0000520	Kahe 4 Overhaul (2003)	LABOR	$0	$0	$313,754	$513	$2,250	$0	$0
		MATERIAL	$0	$0	$199,395	$2,774	$256	$0	$0
		O/S SVCS	$0	$0	$191,501	$0	$0	$0	$0
		OVERHEADS	$0	$0	$146,477	$371	$1,363	$0	$0
P0000520 Total			$0	$0	$851,127	$3,658	$3,869	$0	$0
P0000521	Waiau 8 Overhaul (2003)	LABOR	$0	$0	$0	$0	$683,015	$0	$10,700
		MATERIAL	$0	$0	$0	$0	$857,228	$0	$11,500
		O/S SVCS	$0	$0	$0	$0	$1,535,007	$0	$108,500

HECO T-6 TY 2005	Rev 2005 4/8/2005		
14	$0	$8,000	
51	$0	$0	
35	$0	$138,700	
30	$0	$0	
56	$0	$0	
41	$0	$0	
50	$0	$0	
17	$0	$0	
56	$0	$0	
39	$0	$0	
34	$0	$0	
10	$0	$0	
12	$0	$0	
10	$0	$0	
51	$0	$0	
10	$0	$557,600	
10	$0	$755,800	
19	$481,500	$391,200	
14	$0	$715,600	
13	$481,500	$2,420,200	
19	$0	$548,500	
16	$0	$441,100	
19	$0	$675,300	
16	$0	$371,100	
14	$0	$0	
14	$0	$2,036,000	
18	$0	$0	
16	$0	$0	
18	$0	$0	
17	$0	$0	
19	$0	$0	
16	$803,885	$803,900	
10	$1,040,749	$1,058,600	
10	$507,000	$511,900	
14	$539,194	$564,500	
10	$2,890,828	$2,938,900	
10	$1,149,857	$0	
10	$963,419	$0	
10	$665,000	$0	
10	$771,409	$0	
10	$3,549,685	$0	
10	$552,827	$0	
10	$633,857	$0	
10	$351,000	$0	
10	$371,007	$0	

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st Category	2000 Actual	2001 Actual	2002 Actual	2003 Actual	2004 Actual	HECO T-6 TY 2005	Rev 2005 4/8/2005
	$0	$0	$0	$0	$0	$1,908,691	$0
3OR	$0	$0	$0	$0	$0	$1,016,021	$862,200
TERIAL	$0	$0	$0	$0	$0	$741,267	$743,500
; SVCS	$0	$0	$0	$0	$0	$1,278,000	$1,566,300
ERHEADS	$0	$0	$0	$0	$0	$681,631	$603,600
	$0	$0	$0	$0	$0	$3,716,919	$3,775,600
3OR	$0	$0	$0	$0	$286,103	$0	$429,300
TERIAL	$0	$0	$0	$0	$1,789,315	$204,540	$1,148,900
; SVCS	$0	$0	$0	$0	$326,281	$798,000	$2,385,800
HER	$0	$0	$0	$0	($1,582,029)	$0	($1,032,800)
ERHEADS	$0	$0	$0	$0	$162,249	$0	$281,300
	$0	$0	$0	$0	$981,919	$1,002,540	$3,212,500
3OR	$0	$0	$0	$0	$0	$0	$307,200
TERIAL	$0	$0	$0	$0	$0	$204,540	$1,615,300
; SVCS	$0	$0	$0	$0	$0	$798,000	$1,527,000
ERHEADS	$0	$0	$0	$0	$0	$0	$215,300
	$0	$0	$0	$0	$0	$1,002,540	$3,664,800
	$9,263,095	**$8,946,767**	**$11,159,733**	**$12,176,334**	**$13,802,086**	**$14,552,703**	**$18,186,700**

ment to Production O&M expense due to betterment accounting.

als by Cost Category:

abor	$3,224,739	$2,941,224	$3,246,144	$3,229,477	$3,363,026	$3,522,590	$3,519,400
laterial	$2,387,986	$2,360,075	$3,151,676	$3,172,963	$4,648,622	$3,788,372	$5,774,700
/S Services	$2,351,052	$2,479,973	$3,423,178	$3,395,665	$5,361,569	$4,878,500	$7,166,000
ther	$2,214	$0	$56	$8	($1,582,029)	$0	($1,032,800)
verheads	$1,240,237	$1,151,587	$1,325,434	$2,364,265	$1,971,764	$2,363,241	$2,759,400
ransport	$56,867	$13,908	$13,245	$13,956	$39,134	$0	$0
nd Total	$9,263,095	$8,946,767	$11,159,733	$12,176,334	$13,802,086	$14,552,703	$18,186,700

Credit amount represents reclassification of W9 costs that will be covered by insurance.

CA-IR-181

Ref: HECO Response to CA-IR-1, HECO T-6, Attachment 6 2002-2004 Actual Generation Unit Conditions.

Please explain each of the "Generation Conditions Criteria" and what specific steps are being taken by HECO in response to the trends in such conditions through year-end 2004.

HECO Response:

As described in HECO T-6, page 5, line 12 to page 6, line 5, HECO's system operating criteria calls for the generating units to be dispatched in such a manner as to provide spinning reserve equal to the capacity of the largest running generating unit operating at the time. In most cases, this is equal to 180MW if AES is on line. In the "Generation Conditions Criteria" table (CA-IR-1, Attachment 6) a situation of "Spinning Reserve Shortfall" occurs when the spinning reserve falls below the capacity of the largest generating unit on line (180MW if AES is on line).

In Generation Condition Alpha, there is sufficient spinning reserve (usually 180MW) and therefore no shortfall (spinning reserve shortfall is > 0MW), and reserve capability is available. The reserve capability is in the form of at least one other generating unit which is available but not required to meet demand and therefore not in service. This reserve unit could be, for example, W9 or W10 combustion turbines which are quick-starting units intended for peaking and emergency operation. In this situation, the largest generating unit, e.g., AES, could trip off line and there is sufficient spinning reserve to ensure that the demand for electricity would be met. The reserve unit or units are available for start up if additional capacity is required.

In Generation Condition Beta, there is still sufficient spinning reserve (usually 180MW) and therefore no shortfall (spinning reserve shortfall >0MW), but there are no generating units in reserve – all available generating units are required to meet demand. In this situation, there is sufficient spinning reserve to ensure that the demand for electricity will be met in the event of a

forced outage of the largest generating unit, e.g., AES. In this case, however, there are no reserve units available to restore the lost spinning reserve. (Loss of another generating unit with zero spinning reserve would begin to sag system frequency. The impact to the system will depend on the degree of mismatch between supply and demand, and other factors, as discussed in HECO T-6, page 5, line 1, to page 7, line 24.)

In Generation Condition 1, there is sufficient supply to meet demand and all available units are operating. However, there is a spinning reserve shortfall of 40MW, or a spinning reserve of 140MW. With a spinning reserve of 140 MW, the forced outage or unanticipated maintenance outage of AES (180MW) or K5 (142MW) or K6 (142MW) will result in an underfrequency condition. Whether load is shed or not will depend on how low system frequency sags.

In Generation Condition 2, there is sufficient supply to meet demand, and all available units are operating. However, there is a spinning reserve shortfall of 90MW, or a spinning reserve of 90 MW. With a spinning reserve of 90 MW, the forced outage or unanticipated maintenance outage of any 90 MW unit (W7, W8, K1, K2, K3, or K4), or 1 combustion turbine (CT) unit at KPLP, will deplete the available spinning reserve.

In Generation Condition 3, there is sufficient supply to meet demand. However there is no spinning reserve. With no spinning reserve, the forced outage or unanticipated maintenance outage of any generating unit will result in an underfrequency situation. Whether load is shed or not will depend on how low system frequency sags.

In Generation Condition 4, there is insufficient supply to meet demand, and manual load

Please refer to the 2005 HECO Adequacy of Supply Report to the Commission and the Consumer Advocate submitted on March 10, 2005, for discussion on the specific steps taken by HECO in response to the trends in the Generation Conditions through year-end 2004.

CA-IR-182

Ref: HECO Response to CA-IR-2, HECO T-6, Attachment 3A Power Supply Non-Labor Expense Estimates.

Please explain the basis for each of the following estimated non-labor test year estimated production expense amounts and provide complete copies of all invoices, quantity times price calculations, workpapers and other supporting documentation for such amounts, as well as comparable actual incurred expenses for each of the past three years:

a.	RA=PIB Training Costs	$258,600
b.	RA=PIK City Water	$228,000
c.	RA=PIK Wastewater Chem	$ 81,600
d.	RA=PIK Demin/Evap. Chemicals	$300,000
e.	RA=PIK Condenser Chemicals	$238,800
f.	RA=PIK Boiler Water Treatment	$ 25,200
g.	RA=PIL K1/6 Structural Painting	$200,000
h.	RA=PIL Basin Struct Repairs	$150,000
i.	RA=PIL Cathodic Protection	$150,000
j.	RA=PIL BFP OH (1)	$150,000
k.	RA=PIL Kahe Fuel Tank Deferred	$210,000
l.	RA=PIN Cathodic Protection	$150,000
m.	RA=PIN BFP OH	$150,000
n.	RA=PIN H9 Blr Chem Clean	$400,000
o.	RA=PIO Clean Island Council	$139,000
p.	RA=PIO Honolulu Harbor Fees	$145,600
q.	RA=PIW Wast Water Treat	$ 82,000
r.	RA=PIW Demin/Evap Chemicals	$120,000

s.	RA=PIW Cond. Chemicals	$ 79,800
t.	RA=PIX Asbestos abate/remov	$100,000
u.	RA=PIX Paint Corrosion Control	$400,000
v.	RA=PIX Travel Screen OH	$150,000
w.	RA=PIX Sludge Bed Drying Cell	$100,000

HECO Response:

Pages 3 and 4 are provided for each item noted above indicating the historical cost for years 2002-2004, an explanation of the basis and the reference page showing the details of the historical transactions. The details of the historical transactions are provided per the Work Order Detail Reports. Only those pages from the Work Order Detail Reports that include the above transactions are being provided on pages 6 - 215. Since the copies of these pages are voluminous, one set of copies will be provided to the Commission, Consumer Advocate and the Department of Defense under separate transmittal. Note that handwritten summations are included on the report to reflect the historical amounts. A narrative on how to read the report is provided on page 5.

Hawaiian Electric Company, Inc.
Rate Case - Test Year 2005
Non-Labor Expenses - Select Items

	Budget Item	RA Desc	2002	2003	2004	2005	Basis/Comments See Code Expl Below	Reference Pages
a.	RA=PIB Training Costs	PS O&M Admin	0	0	0	258,600	NC	None
b.	RA=PIK City Water	Kahe Oper	233,650	156,174	161,522	228,000	HE and SE	pg. 6 - 8
c.	RA=PIK Wastewater Chem	Kahe Oper	85,493	28,618	54,930	81,600	HE and SE	pg. 9-15
d.	RA=PIK Demin/Evap. Chem	Kahe Oper	296,458	391,968	433,819	300,000	HE and SE	pg. 16 - 27
e.	RA=PIK Condenser Chem	Kahe Oper	239,221	234,886	135,015	238,800	HE and SE	pg. 28 - 41
f.	RA=PIK Boiler Water Trmt	Kahe Oper	35,332	39,411	52,836	25,200	HE and SE	pg. 42 - 63
g.	RA=PIL K1/6 Struct Paint	Kahe Maint	0	0	535,200	200,000	Non-Recurring	pg. 64
h.	RA=PIL Basin Struct Repairs	Kahe Maint	0	46,600	146,800	150,000	HE and SE	pg. 65
i.	RA=PIL Cathodic Protection	Kahe Maint	8,000	0	0	150,000	TA	None
j.	RA=PIL BFP OH	Kahe Maint	392,444	641,344	72,711	150,000	HE and SE	pg. 66 - 83 See pg.4 for incl of unit OH with BFP work
k.	RA=PIL Kahe Fuel Tank	Kahe Maint	0	0	0	210,000	Non-Recurring	None
l.	RA=PIN Cathodic Protection	Hono Maint	0	0	0	150,000	TA	None
m.	RA=PIN BFP OH	Hono Maint	93,600	160,920	158,137	150,000	HE and SE	pg. 84 - 88 See pg.4 for incl of unit OH with BFP work
n.	RA=PIN H9 Blr Chem Clean	Hono Maint	0	0	0	400,000	Non-Recurring	See pg.4 for incl of unit OH with Blr Cln work
o.	RA=PIO Clean Island Council	Planning	139,000	139,000	139,000	139,000	HE and SE	pg. 89 - 97
p.	RA=PIO Hono Harbor Fees	Planning	145,658	(145,658)	0	145,600	Hono Cln Up	None
q.	RA=PIW Waste Water Treat	Waiau Oper	112,763	83,030	55,577	82,000	HE and SE	pg. 98 - 104
r.	RA=PIW Demin/Evap Chem	Waiau Oper	89,134	115,432	17,394	120,000	HE and SE	pg. 105 - 113
s.	RA=PIW Cond. Chemicals	Waiau Oper	95,233	78,380	68,826	79,800	HE and SE	pg. 114 - 120
t.	RA=PIX Asbestos abate/rem	Waiau Maint	99,562	17,736	41,172	100,000	HE and SE	pg. 121 - 127
u.	RA=PIX Paint Corr Control	Waiau Maint	0	0	680,100	400,000	Non-Recurring	pg. 128
v.	RA=PIX Travel Screen OH	Waiau Maint	131,552	(285,189)	0	150,000	HE and SE	pg. 129 - 153
w.	RA=PIX Sludge Bed Dry Cell	Waiau Maint	105,168	59,893	46,008	100,000	HE and SE	pg. 154 - 159

Explanations -

NC - Cost expense element is "NC". Cost is cleared and is not an O&M expense item.

HE and SE - Estimate based on Historical Expenditures and Staff Experience. For the travel screen overhaul prior to 2003, scope of work had changed such that replacement of the travel screen became capital work.

Non-Recurring - The nature of these type of "significant" projects is based on department prioritization, condition review and financial considerations. Mix of these projects happens cyclically within the plant site or among the various plant sites. The estimate is based on staff experience, historical indicators and verbal estimates from contractors.

TA - Technical Assessment of the Company's various cathodic protection systems is on-going. 2005 estimate is based on staff experience.

Hono Cln-Up - In years 2002-2004 actual cost were related to the Honolulu Clean-Up Fees which was accrued in 2001, and therefore net expense for years 2002-2004 was zero. 2005 reflects other Honolulu Harbor cost that would not be covered by the amount that was accrued back in 2001.

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t for Select Items)

RA Desc	2002	2003	2004	2005	Basis/Comments See Code Expl on pg 3	Ref Pages
Kahe Maint	392,444	641,344	72,711	150,000	HE and SE	pg. 66 - 83
Hono Maint	93,600	160,920	158,137	150,000	HE and SE	pg. 84 - 88
	109,112	228,362	2,134		Part of OH scope of work	pg.160 - 170
	1,133	0	1,125		Part of OH scope of work	pg.171 - 176
	596,289	1,030,626	234,107	300,000		
Hono Maint	0	0	0	400,000	Non-Recurring.	None
	0	0	147,759	125,000	Part of OH scope of work	pg.177 - 189
	163,235	0	165,560		Part of OH scope of work	pg.190 - 215
	163,235	0	313,319	525,000		

CA-IR-182
DOCKET NO. 04-0113
PAGE 4 OF 215

Hawaiian Electric Company, Inc.
Rate Case – Test Year 2005
Work Order Detail Report - Narrative
Report No. 1652

Parameters:

- Selected one work order per report
- Printed entire report, but only kept those pages where there were non-labor transactions.

Data represented is transaction data.

- Primary sort is by code block with similar transactions grouped together.
- Secondary sort within each group is the date chronologically ascending by transaction date.
- The dept. RA and Expense element is included in the code block for each transaction.
- A subtotal is provided for each group of transaction.
- For material purchases and outside service transactions, additional data provided such as supplier no., invoice no., invoice item no., invoice item description, voucher/journal entry no., voucher/journal entry description, stock code, stock description, purchase order no., unit of purchase and quantity.

Due to the voluminous nature of the information, one copy (pages 6 – 215) will be provided to the Consumer Advocate, Department of Defense and the Public Utilities Commission under separate transmittal.

CA-IR-183

Ref: HECO Response to CA-IR-2, HECO T-6, Attachment 3C, Page 8, Emission Fee Expense Estimates.

Please provide a copy of the most recent available emission fee report, calculations and paid invoice for HECO, as well as details regarding the history of HECO's fee payments and amounts waived for the past ten years, indicating how the 7/10 prorate was determined to support the Company's normalization adjustment.

HECO Response:

The most recent emission fee report and associated emission calculations are voluminous and therefore one copy each will be provided to the Commission, Consumer Advocate and the Department of Defense under separate transmittal. This report covers 2003 calendar year operations as the 2004 calculations are still in progress. Please note that as stated on pages 3-9, emission fees for 2003 operations were waived by the Department of Health, thus no emission fees were paid in 2004. Emission fees will NOT be waived for 2004, and as mentioned above, calculations are in progress and an amount will be paid in 2005.

Emission fees payments began in 1994 and were assessed for 1993 operations. These emission fee assessments were provided for under the legal authority of the Clean Air Act, Hawaii revised Statutes (HRS) Chapter 342B, and Hawaii Administrative Rules (HAR) Chapter 11-60.1.

The authority for granting emission fee waivers rests with the Department of Health and is provided for under HAR 11-60.1-112(h). HECO is typically notified by the Department of Health in January regarding waivers for the previous calendar year operations.

As advanced notice of an emission fee waiver is not possible, HECO includes emission fees in its forecasted expenses. The estimated emission fees are calculated based on forecasted fuel consumption and formulas for associated emissions from calculations done in previous

years. In addition to the consumer price index mentioned in HECO T-6, at line 15, emission fee estimates may be adjusted in the course of the year based on changes in actual fuel consumption or changes in fuel forecasts.

The basis for the 7/10 prorate calculations are provided in HECO T-6, page 21, lines 10-13. The calculation of the normalization adjustment of $246,000 was based on the annual emission fees paid in 7 of the past 10 years as summarized below.

Chronological Summary of Emission Fees for HECO Operations

Operating Year	Fees Payable	Amount Paid
1993	1994	$601,634.00
1994	1995	$624,424.00
1995	1996	$672,023.43
1996	1997	$676,770.10
1997	1998	$649,103.49
1998	1999	Waived
1999	2000	$677,127.47
2000	2001	$671,210.81
2001	2002	Waived
2002	2003	$747,540.99
2003	2004	Waived
2004	2005	No Waiver – Calculations in progress.

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HNL
WAIAU

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
File:

January 9, 2004

04-021E CAB

TO: Owners or Operators of Covered Sources

FROM: Chiyome Leinaala Fukino, M.D.
Director of Health

SUBJECT: 2004 Annual Fee Waiver for Covered Sources
(For Operation in Calendar Year 2003)

The Department of Health (Department) is pleased to inform you that a **fee waiver for this calendar year has been granted** to all owners or operators of covered sources. The waiver is provided in accordance with Hawaii Administrative Rules, §11-60.1-112(h) and, as a result, **no annual fee payment is required** for calendar year 2004. Any annual fee payment received for this year will be returned to the owner or operator, or will be refunded if the payment was processed.

Please note that although the 2004 annual fees are waived, annual emissions reports are still due by **March 1, 2004**. The Department requests that each covered source complete the enclosed Form F-1 and Form F-2 (if necessary) to summarize the facility's total emissions, and submit these forms with the supporting documentation and required annual emissions reports. If you need additional time for reporting your annual emissions, please submit a written request for extension as provided in your air permit.

FOR MAJOR SOURCES and SOURCES EMITTING 5 TONS PER YEAR OR MORE OF LEAD OR LEAD COMPOUNDS:

Please note that annual emissions reporting requirements have changed for major sources emitting 100 tons per year (tpy) or more of SOx, NOx, VOC, PM10, PM2.5, or NH3; or 1,000 tpy or more of CO; or for sources emitting 5 tpy or more of lead or lead compounds. Reporting requirements changed due to each state's obligation to report more detailed emissions information to the Environmental Protection Agency in accordance with Title 40 of the Code of Federal Regulations Part 51, Consolidated Emissions Reporting Rule (CERR). As a result, the Department will be requesting the resubmittal of the 2002 annual emissions from all sources who reported emissions at the indicated emission levels above. These sources will be receiving instructions by the end of January on the new reporting requirements and will be provided new dates for submitting 2002 and 2003 annual emissions.

RE: BRUCE
UM

All other sources that did not emit pollutants at the CERR thresholds in calendar year 2002, should report emissions as usual by March 1, 2004, unless an extension is granted. Should your facility's emissions increase and meet CERR reporting thresholds based on 2003 emissions, please contact the Department for further information.

Although annual emissions reporting requirements have changed for some sources, we hope the 2004 annual fee waiver will offer some relief for the additional effort initially required in fulfilling the new reporting requirements.

If you have any questions regarding the annual fee waiver or emissions reporting, please contact Messrs. Scott Takamoto or Kevin Kihara of the Clean Air Branch at (808) 586-4200.

ST:lk

Enclosures

1) General Instructions, Form F-1, 2004 Annual Fee Summary for Covered Sources
2) General Instructions, Form F-2, Supplemental Form, 2004 Annual Fee Summary for Covered Sources
3) Form F-1, 2004 Annual Fee Summary for Covered Sources
   Note: Calendar year 2004 annual fees would have included a consumer price index (CPI) adjustment of 1.8% (increase from 2001 to 2002) above the 2003 annual fee dollar per ton charge (for 2002 emissions). The change is noted on Form F-1.
4) Form F-2, Supplement _, 2004 Annual Fee Summary for Covered Sources

If any of the information provided on the fee form(s) needs to be revised, please provide the necessary revisions.

c: CAB Enforcement Section

GENERAL INSTRUCTIONS, FORM F-1
2004 ANNUAL FEE SUMMARY FOR COVERED SOURCES

1. Facility Information.

   a. Please print/type requested information, except for signature block 1.N.

   b. When possible and applicable, be consistent with the information presented in your Covered Source Permit Application, Standard Permit Application, Form S-1.

2. Calculated Emissions.

   a. Correspond Equipment Unit Number on Form F-1, with the Equipment I.D. or Number on the Equipment Data Sheets.

   b. Calculate actual emissions in tons/year for all regulated air pollutants (toxic and nontoxic). Emissions shall be calculated in accordance with HAR, Section 11-60.1-115. Report all hazardous air pollutant emissions greater than one ton per year. All calculated emissions for each equipment shall be reported to the nearest tenth of a ton on Forms F-1, and F-2 (if needed), and the sum of each pollutant (nearest tenth of a ton) entered on line **2.B. "Total Report Emissions."**

   c. For "each" regulated air pollutant subject to fees, any fraction of a ton calculated on line 2.B. shall be dropped, and the total less the fraction of a ton entered on line **2.C. "Total Emissions, Subject to Fees."** If total emissions for any one air pollutant exceed 4,000 tons/yr., enter "4,000" on line 2.C. for that pollutant.

   d. PM_{10} emissions are accounted for under TSP. Do not include in line 2.C. for fee calculation. Any reported lead (Pb) emissions should be included with TSP emissions. Do not double count lead emissions for fee purposes.

   e. The resulting whole tons (drop the fractions of a ton) entered in line 2.C. shall be summed, and the resulting total entered in block **2.D.**

3. 2004 Annual Fee Calculation (2004 FEES WAIVED, DO NOT INCLUDE PAYMENT FOR THIS YEAR)

   a. The fee summary sheet is complete. Do not proceed to Section 3 on Form F-1.
   b. Mail 2004 annual fee Form F-1, Form F-2 (if applicable), equipment data sheets and supporting documentation to:

Clean Air Branch
Hawaii Department of Health
P. O. Box 3378
Honolulu, HI 96801-3378

GENERAL INSTRUCTIONS, FORM F-2
SUPPLEMENT FORM
2004 ANNUAL FEE SUMMARY FOR COVERED SOURCES

Form F-2 should be used when a covered source needs additional space to itemize all emission units and their respective pollutant emissions.

If Form F-2 is used, the first Form F-2 should be identified at the top of the form as Supplement **"A,"** the second form as Supplement **"B,"** the third form as Supplement **"C,"** and so forth.

1. Facility Information.

   a. Please print requested information, except for signature block 1.G.

   b. When possible, be consistent with the information presented in your Covered Source Permit Application, Standard Permit Application, Form S-1.

2. Calculated Emissions.

   a. Correspond Equipment Unit Number on Form F-1, with the Equipment I.D. or Number on the Equipment Data Sheets.

   b. Calculate emissions in tons/year for all regulated air pollutants (toxic and nontoxic). Emissions shall be calculated in accordance with HAR, Section 11-60.1-115. Report all **hazardous air pollutant** emissions greater than one ton per year. All calculated emissions for each equipment shall be reported to the nearest tenth of a ton on Forms F-1, and F-2 (if needed), and the sum of each pollutant entered on the **"Total Report Emissions"** line.

   c. Dropping the fractions of emissions for fee purposes is only performed on *Form F-1 on line "2.C. Total Emissions Subject to Fees."*

Example:

1) If only one Form F-2 is used:

   * The form should be identified as Supplement **"A."**
   * All calculated totals in Supplement "A," **Total Report Emissions**, should be transferred to line **2.A.** in *Form F-1.*
   * Supplement "A" should be annotated on line **2.A.** of *Form F-1.*
   * Complete *Form F-1* as instructed, treating the totals listed in line **2.A.** of *Form F-1* as one emission unit.

2) If two Form F-2's are needed to report air pollutant emissions:

   * The forms should be identified as Supplement **"A" and "B."**

   * The calculated totals in Supplement "A," **Total Report Emissions**, should be transferred to Supplement "B" at the bottom of the page, on the supplement line. Mark this supplement line as Supplement "A" to identify the supplement for which the totals were derived.

   * All calculated totals in Supplement "B," **Total Report Emissions** (includes the totals of Supplement "A"), should be transferred to line **2.A.** in *Form F-1*.

   * Supplement "B" should be annotated on line **2.A.** of *Form F-1*.

   * Complete *Form F-1* as instructed, treating the totals listed in line **2.A.** of *Form F-1* as one emission unit.

3) If three or more Form F-2's are needed to report air pollutant emissions:

   * Each form should be identified with successive letters, e.g., Supplement **"A,"** Supplement **"B,"** Supplement **"C,"** and so forth.

   * The calculated totals in Supplement "A," **Total Report Emissions**, should be transferred to Supplement "B" at the bottom of the page, on the supplement line. Mark this supplement line as Supplement "A" to identify the supplement for which the totals were derived.

   * The calculated totals in Supplement "B," **Total Report Emissions** (includes the totals of Supplement "A"), should be transferred to Supplement "C" at the bottom of the page, on the supplement line. Mark this supplement line as Supplement "B" to identify the supplement for which the totals were derived.

   * If Supplement "C" is the last Form F-2, the calculated totals in Supplement "C," **Total Report Emissions** (includes totals of Supplements "A" and "B"), should be transferred to line **2.A.** in *Form F-1*.

   * Supplement "C" should be annotated on line **2.A.** of *Form F-1*.

   * Complete *Form F-1* as instructed, treating the totals listed in line **2.A.** of *Form F-1* as one emission unit.

Remember to submit the Form(s) F-2, with Form F-1, Equipment Data Sheets, the applicable emissions documentation, and the appropriate annual fees.

[redacted]

FORM F-2
SUPPLEMENT ___
2004 ANNUAL FEE SUMMARY FOR COVERED SOURCES
(FOR AIR POLLUTANTS EMITTED DURING CALENDAR YEAR 2003)

File 0238
Date Received ____

1. FACILITY INFORMATION (PLEASE PRINT)

A. Facility Name: Hawaiian Electric Co., Inc. - Honolulu Generating Station	B. Location:	C. Island:
D. Responsible Official:	E. Title:	F. Telephone No.:
G. Signature: _____ Date: Based on the information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.		

2. CALCULATED EMISSIONS (CALCULATE AND REPORT EMISSIONS TO THE NEAREST TENTH OF A TON.)

Equipment: Stack Number or Unit Number	Air Pollutant Emissions (tons/yr)												
	Other Regulated Air Pollutants Including Hazardous Air Pollutants (Please specify)												
	TSP	PM_{10}	SO_2	CO	NO_x	VOC	Pb						
Supplement _____													
Total Report Emissions													

[FEES/2004/maller/04formf2.wpd]

Due to the voluminous nature of the information, one copy (pages 10 - 116) will be provided to the Consumer Advocate, the Department of Defense and the Public Utilities Commission under separate transmittal.

CA-IR-184

Ref: HECO Response to CA-IR-2, HECO T-6, Attachment 3D, Admin/Planning Non-Labor Expense Estimates.

Please explain the basis for each of the following non-labor test year expense estimates and provide complete copies of all invoices, quantity times price calculations, Hawaii PUC Decision & Order references and other supporting documentation for such amounts, as well as comparable actual incurred expenses for each of the past three years:

a. RA=PYA Kahe 7 Amortization $900,000

b. RA=PYA Wauai Water Well Amort $302,244

c. RA=PYB Alternative Tolling Consult. $ 75,000

d. RA=PYB Competitive Bidding Legal $ 75,000

HECO Response:

a. The $900,000 represents the amortization amount based on a settlement agreement between HECO and the Consumer Advocate that was approved by the PUC under Hawaii PUC Decision & Order ("D&O") No. 18872 issued on September 5, 2001 in Docket No. 95-0047. D&O No. 18872 allowed HECO to amortize $4.5 million over five (5) years starting in October 2001 and ending in September 2006. The actual cost incurred over the past three years (2002-2004) was $900,000 per year.

b. The $302,244 represents the amortization of HECO's portion of charges incurred for the Waiau Well Water project that was built to provide water to the Independent Power Producers at Kalaeloa and AES. The amortization of these costs was based on the Hawaii

PUC Decision & Order No. 13618 dated October 31, 1994 in Docket No. 7277 (which provides the accounting treatment for this amortization). The amortization started in 1996

c. The $75,000 represents the estimated consultant costs to perform a study that would evaluate the pros and cons of purchasing power from non-utility generators through tolling arrangements instead of through traditional capacity and energy payments in purchase power agreements. HECO did not incur any costs for this study over the past three years.

d. The $75,000 represents the estimated legal costs to support HECO in the ongoing Competitive Bidding for New Generating Capacity in Hawaii ("Competitive Bidding") Docket No. 03-0372. No legal costs for the Competitive Bidding docket were incurred in 2002 and 2003. In 2004, HECO incurred $7,792 in legal fees and $9,981 in consulting fees. In 2005, year-to-date expenses through April 12, 2005 amounted to $8,361 in legal fees and $18,792 in consulting fees (see cost breakdown on pages 3 and 4). HECO expects to incur additional legal costs in 2005 comparable to legal fees incurred for the Instituting A Proceeding to Investigate Distributive Generation In Hawaii, Docket No. 03-0371. To-date HECO incurred $58,151 of legal fees for Docket No. 03-0371 and the HECO expects to incur additional expense in 2005 for this proceeding.

1652 Work Order Detail / Summarized Labor Report

Report Parameters

District: P *Parent WO:* * *WO Number:* HP001789 *From Date:* 190001 *To Date:* 999912 *Show Emp Info:* No

Company: **HECO**

Parent WO:

Work Order: HP001789 **Comp Bid Work - Generation Planning Div.** Vendor = Merrimack Energy Co., Ltd.

Invoice Transactions

Tran Dte	*Acct Code*	*Cat No*	*Supplier No*	*Inv No*	*Inv Item No*	*Inv Item Desc*	*Contract No*	*Portion No*	*Element No*	*Tran Amt*
Expense Element: 501	**Outside Svcs-General**									
06/19/2004	PYB700PPONENPYZZZZZ501	01	017792	523	001	LABOR	PYA03022	01	01	4523.70
06/19/2004	PYB700PPONENPYZZZZZ501	01	017792	523	001	LABOR	PYA03022	01	01	180.95
07/20/2004	PYB700PPONENPYZZZZZ501	01	017792	533	001	CONSULTING SVC	PYA03022	01	01	371.04
07/20/2004	PYB700PPONENPYZZZZZ501	01	017792	533A	001	CONSULTING SVC	PYA03022	01	01	14.84
07/20/2004	PYB700PPONENPYZZZZZ501	01	017792	533A	001	CONSULTING SVC	PYA03022	01	01	371.04
07/20/2004	PYB700PPONENPYZZZZZ501	01	017792	533DM	001	OFFSET ENTRY ERRO	PYA03022	01	01	-371.04
08/23/2004	PYB700PPONENPYZZZZZ501	01	017792	539	001	LABOR	PYA03022	01	01	477.05
08/23/2004	PYB700PPONENPYZZZZZ501	01	017792	539	001	LABOR	PYA03022	01	01	19.08
09/21/2004	PYB700PPONENPYZZZZZ501	01	017792	544	001	LABOR	PYA03022	01	01	212.02
09/21/2004	PYB700PPONENPYZZZZZ501	01	017792	544	001	LABOR	PYA03022	01	01	8.48
10/19/2004	PYB700PPONENPYZZZZZ501	01	017792	555	001	SERVICES	PYA03022	01	01	3801.26
10/19/2004	PYB700PPONENPYZZZZZ501	01	017792	555	001	SERVICES	PYA03022	01	01	152.05
11/24/2004	PYB700PPONENPYZZZZZ501	01	017792	565	001	SERVICES	PYA03022	01	01	212.04
11/24/2004	PYB700PPONENPYZZZZZ501	01	017792	565	001	SERVICES	PYA03022	01	01	8.48
02/04/2005	PYB700PPONENPYZZZZZ501	01	017792	573	001	LABOR	PYA03022	01	01	145.08
02/04/2005	PYB700PPONENPYZZZZZ501	01	017792	573	001	LABOR	PYA03022	01	01	3627.12
02/17/2005	PYB700PPONENPYZZZZZ501	01	017792	577	001	LABOR	PYA03022	01	01	1790.76
02/17/2005	PYB700PPONENPYZZZZZ501	01	017792	577	001	LABOR	PYA03022	01	01	71.63
03/18/2005	PYB700PPONENPYZZZZZ501	01	017792	581	001	LABOR	PYA03022	01	01	1263.98
03/18/2005	PYB700PPONENPYZZZZZ501	01	017792	581	001	LABOR	PYA03022	01	01	50.56
04/12/2005	PYB700PPONENPYZZZZZ501	01	017792	585	001	LABOR	PYA03022	01	01	71.62
04/12/2005	PYB700PPONENPYZZZZZ501	01	017792	585	001	LABOR	PYA03022	01	01	1790.64
							Expense Element: 501		**Subtotal:**	18792.38
Expense Element: 502	**Outside Svcs-Legal**									
04/21/2004	PNP700PPONENPYZZZZZ502		003105	300211	001	GOODSILL-Competitive				415.25
04/21/2004	PNP700PPONENPYZZZZZ502		003105	298775	001	GOODSILL-Competitive				497.88
06/28/2004	PYB700PPONENPYZZZZZ502		003105	301152	001	GOODSILL-Competitive				733.29
07/01/2004	PYB700PPONENPYZZZZZ502		003105	301512	001	GOODSILL-Competitive				1588.79

1652 Work Order Detail / Summarized Labor Report

Report Parameters

District: P *Parent WO:* * *WO Number:* HP001789 *From Date:* 190001 *To Date:* 999912 *Show Emp Info:* No

Company: **HECO**

Invoice Transactions

Tran Dte	*Acct Code*	*Cat No*	*Supplier No*	*Inv No*	*Inv Item No*	*Inv Item Desc*	*Contract No*	*Portion No*	*Element No*	*Tran Amt*
07/13/2004	PYB700PPONENPYZZZZZ502		003105	302516A	001	GOODSILL-Competitive				763.84
08/11/2004	PYB700PPONENPYZZZZZ502		003105	303159	001	GOODSILL-Competitive				234.71
09/24/2004	PYB700PPONENPYZZZZZ502		003105	303848A	001	GOODSILL-Competitive				90.28
10/22/2004	PYB700PPONENPYZZZZZ502		003105	304745B	001	GOODSILL-Competitive				324.98
11/29/2004	PYB700PPONENPYZZZZZ502		003105	305779A	001	GOODSILL-Competitive				496.49
12/16/2004	PYB700PPONENPYZZZZZ502		003105	306620A	001	GOODSILL-Competitive				2646.36
02/28/2005	PYB700PPONENPYZZZZZ502		003105	308629	001	GOODSILL-Competitive				108.33
04/11/2005	PYB700PPONENPYZZZZZ502		003105	309282	001	GOODSILL-Competitive				460.38
								Expense Element: 502	**Subtotal:**	8360.58
Expense Element: 521	**Meals & Entertainment**									
10/04/2004	PYB700PPONENPYZZZZZ521		E21013	2004092	002	EMPLOYEE EXPENSE				62.21
								Expense Element: 521	**Subtotal:**	62.21
									Total:	27215.17

Labor Costs

Process Pd	*Tran Dte*	*Acct Code*	*Emp ID*	*Last Name*	*First Name*	*No of Hours*	*Tran Amt*
Expense Element: 150	**Labor Cost**						
200403	03/01/2004	PYB700PPONENPYZZZZZ150				1.00	34.81
	03/01/2004	PYB700PPONENPYZZZZZ150				8.00	278.48
	03/02/2004	PYB700PPONENPYZZZZZ150				2.00	69.62
	03/02/2004	PYB700PPONENPYZZZZZ150				4.00	139.24
	03/03/2004	PYB700PPONENPYZZZZZ150				1.00	34.81
	03/03/2004	PYB700PPONENPYZZZZZ150				2.00	69.62
	03/04/2004	PYB700PPONENPYZZZZZ150				3.00	104.43
	03/04/2004	PYB700PPONENPYZZZZZ150				1.00	34.81
	03/05/2004	PYB700PPONENPYZZZZZ150				1.00	34.81
	03/05/2004	PYB700PPONENPYZZZZZ150				1.00	34.81
	03/08/2004	PYB700PPONENPYZZZZZ150				1.00	34.81
	03/09/2004	PYB700PPONENPYZZZZZ150				1.00	34.81
	03/10/2004	PYB700PPONENPYZZZZZ150				2.00	69.62
	03/11/2004	PYB700PPONENPYZZZZZ150				3.00	104.43
	03/11/2004	PYB700PPONENPYZZZZZ150				2.00	69.62

CA-IR-185

Ref: HECO Response to CA-IR-2, HECO T-6, Attachment 3E, Electronic Shock Absorber R&D Expense Estimate.

Please provide the following information regarding the costs of this project, which is included in the test year forecasted expenses:

a. Copies of all proposals, contracts, studies, workpapers, correspondence and other documentation supportive of this project.

b. Monthly actual and projected expenditures incurred to-date and planned through project completion, by NARUC Account.

c. Copies of all reports and recommendations from Phase I of the ESA effort.

d. Explain HECO's long-term plans associated with ESA, including any potential investment or technology licensing arrangements the Company intends to explore to recover its

Electric on pages 81 - 97, and

5. Intellectual Property Agreement with S&C Electric on pages 98 - 107.

b. The actual nonlabor expenditures for the ESA are as follows:

1. August 2004 $60,580

2. November 2004 $90,870

(Both amounts include use tax.)

No costs have been incurred to date in 2005.

For the test year estimates, the $500,000 for ESA related activities is evenly distributed through the year ($41,667 per month from January 2005 to November 2005 and $41,663 for December 2005).

c. See response part a. 3.

d. HECO filed and received a patent (U.S. Patent 6,858,953 issued on Feb. 22, 2005?) It has always been the intention of HECO to have the electronic shock absorber ("ESA") available for wind dev elopers as a possible solution to utility issues related to wind farm interconnections. To this end, HECO signed an Intellectual Property License Agreement with S&C Electric who has plans to market this device to the wind developers (see a. 5)). This device will hopefully address utility issues related to wind farm interconnection to a utility grid. Per the Intellectual Property Agreement, HECO would be getting a royalty payment as a function of the sales of the ESA devices by S&C Electric.

e. EPRI funds were not used in the development of the ESA because EPRI would have kept all intellectual property rights and any future revenues related to this device. EEI does not have any research and development capability to take the ESA [illegible]

with the ESA components and research and development experience.

f. See response to parts a., b. and c.

CONFIDENTIAL
Subject To Protective Order

Due to the confidential nature of the information, pages 4-107 will be submitted under protective order once a protective order is issued in this proceeding.

CA-IR-186

Ref: HECO Response to CA-IR-2, HECO T-6, Attachment 3L, Technology Entries Expense Estimate.

Please provide the following information regarding the Sun Power for Schools and Biomass projects included in the test year forecasted expenses:

a. Copies of all proposals, contracts, studies, workpapers, correspondence and other documentation supportive of each of these projects.

b. Monthly actual incurred to-date and projected expenditures through project completion, by NARUC Account, for each project.

c. Explain and quantify how, for the Sun Power program, "[t]his estimate is offset by monies collected from our customers that are participating", indicating where such cost "offset" amounts are included in the test year.

d. Explain what is meant by "placeholder for the biomass initiative" and provide copies of all economic justification for the inclusion of these expenses in the test year at this time.

HECO Response:

a. Information regarding the Sun Power for Schools and biomass programs is listed below.

1. The latest Sun Power for Schools Status Reports dated December 31, 2004, which was

b. The monthly actual non-labor expenditures for the Sun Power for Schools and biomass programs for the year to date are as follows:

Sun Power for Schools program	NARUC 506 $0 costs incurred year to date
Biomass program	NARUC 9302 $0 costs incurred year to date

For test year estimates included in direct testimony, the $75,000 for Sun Power for Schools and $100,000 for the biomass program and are evenly distributed throughout the year from January 2005 to December 2005 at $6,250 per month and $8,333.33 per month, respectively.

c. As part of HECO's Sun Power for Schools program, voluntary contributions from participating customers are collected to cover non-labor costs associated with photovoltaic installations (e.g., equipment, materials, and labor and non-labor installation costs). These contributions are initially recorded to a liability account (NARUC Account 242). On a quarterly basis, HECO's General Accounting Department records a journal entry to reduce the liability account and to credit or "offset" the aforementioned expenses associated with Sun Power for Schools installations. The number of photovoltaic installations that can be installed in a given year is a function of the amount of contributions that are recorded to the liability account. Since the amount of Sun Power for School non-labor expenses will be offset by the contributions by participating customers, the test year expense should be revised to reflect the offset. HECO will revise its test year estimates to reduce the Sun Power for Schools test year expense to zero in its rebuttal testimony.

d. The Memorandum of Understanding ("MOU") with the University of Hawaii at Manoa,

Alexander and Baldwin, Inc. and HECO, dated December 11, 2003, attached on pages 31-33, was entered into to promote opportunities and collaborate to accelerate the commercialization and deployment of biomass power technologies and operations in Hawaii. As a result of this MOU, HECO anticipates cost-sharing opportunities in 2005 to support associated projects and/or studies. The referenced "placeholder for the biomass initiative" includes this forecasted non-labor cost item. In addition, HECO has an on-going biofuels assessment program to investigate the use of liquid biofuels, such as ethanol and biodiesel, in existing and future conventional fossil generating systems. In 2005, HECO plans to contract with the Southwest Research Institute to conduct emissions testing in a combustion turbine combustor rig fired with biofuel blends. HECO has a pending contract with Southwest Research Institute in the amount of $154,794 (HECO submitted a signed

contract to Southwest Research Institute and is awaiting their signature/execution). HECO plans to use a portion or all of the test year biomass initiative expense to co-fund this project (R&D funds from HECO's Electric Power Research Institute membership will supplement this project's funding). The biomass initiative funding may also be used for possible studies and activities related to co-firing of biomass.

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840

March 2, 2005

William A. Bonnet
Vice President
Government and Community Affairs

The Honorable Chairman and Members of
the Hawaii Public Utilities Commission
465 South King Street
Kekuanaoa Building, 1st Floor
Honolulu, Hawaii 96813

FILED
2005 MAR -2 P 3:39
PUBLIC UTILITIES
COMMISSION

Dear Commissioners:

Subject: HECO, HELCO, MECO
Sun Power for Schools
Green Pricing Program Provision

Attached is HECO, HELCO, and MECO's ("the Companies") eighteenth status report on their respective Sun Power for Schools green pricing program.

The status report provides information on the Companies' marketing efforts, project status, and participation levels for the Sun Power for Schools program.

If you have any questions on this matter, please call Dan Brown at 543-4795.

Very truly yours,

Attachment

cc: Division of Consumer Advocacy

RECEIVED
2005 MAR -2 P 3:47
DIV. OF CONSUMER ADVOCACY
DEPT. OF COMMERCE AND
CONSUMER AFFAIRS
STATE OF HAWAII

Sun Power for Schools

Status Report

as of

December 31, 2004

Hawaiian Electric Company, Inc.
Hawaii Electric Light Company, Inc.
Maui Electric Company, Limited

BACKGROUND

In September 1996, HECO utilities, comprising Hawaiian Electric Company (HECO), Hawaii Electric Light Company (HELCO), and Maui Electric Company (MECO), filed with the Hawaii Public Utilities Commission (HPUC) a Green Pricing Program Provision entitled *Sun Power for Schools*.

The *Sun Power for Schools* program formed a three-way partnership between the HECO utilities, the State of Hawaii Department of Education (DOE), and our customers. The goal of the *Sun Power for Schools* program was to install a minimum of 20,000 watts of photovoltaic (PV) systems on qualifying schools over the two years of the project (1997-1998). To date, over 23,000 watts of PV systems on 20 schools have been installed. The *Sun Power for Schools* program was funded through HECO utilities contributions of $140,000 and voluntary customer and non-customer contributions backed by a two-year program commitment from the HECO utilities. The DOE has been developing the educational material component of the *Sun Power for Schools* program for integration into the existing energy and environmental curricula. HECO utilities assisted the DOE in the development of the educational material.

During the first year of the *Sun Power for Schools* program (1997), the HECO utilities filed quarterly status reports with the HPUC. Starting in the second year of the program (1998), HECO utilities have been filing semi-annual status reports.

The initial two years of the *Sun Power for Schools* program ended in December 1998. The program was extended two more years to the year 2000. In November 2000, the HECO utilities notified the HPUC regarding a two-year extension of the program (2001-2002). In October 2002, the DOE and HECO utilities signed agreements for another two-year extension (2003-2004). In October 2004, the HECO utilities notified the HPUC regarding a two-year extension of the program through 2006 (the DOE and HECO utilities have signed agreements for this extension). For this two-year extension of the *Sun Power for Schools* program, HECO utilities will continue to provide labor and non-labor in-kind contributions for project management, engineering, marketing, and advertising.

This report is divided into the following major sections:

- Marketing
- Project Status
- Participation
- Expenditures

MARKETING

The HECO utilities report the following marketing activities completed during the second half of 2004 (July through December):

HECO

- Featured the *Sun Power for Schools* program in the November 2004 issue of *Consumer Lines* (customer newsletter provided with the monthly bills) along with postage-paid reply cards for customers to sign up.

- Aired *Sun Power for Schools* 60-second radio spots by Perry & Price on KSSK (one week -- August 2004).

- Placed full-page color print ad in *Hawaii Parent* magazine December 2004/January 2005 issue.

- Placed ads in community newspapers: *E Ha'ilono* (Kapolei) (September 2004; one-half page color ad), *Waikele Ohana* (third quarter issue; one-half page color ad); *MidWeek MetroWest Islander* (September 1 and 15, 2004), and *MidWeek Central Islander* (September 1, 2004).

- The *Sun Power for Schools* curriculum, PowerQuest, was developed utilizing a Million Solar Roofs Initiative grant secured for the DOE by HECO. Copies of the PowerQuest teaching manual were distributed to HECO, HELCO and MECO and all middle and high schools in the State in February 2001. The energy lessons are being used by the *Sun Power for Schools* sites and other schools to encourage students to learn about renewable energy. HECO is continuing to distribute copies to public and private school teachers throughout the State upon request. Copies have been made into compact discs and distributed to schools on an on-going basis.

- The Sun Power for Schools program was publicized and included in exhibits on renewable energy at two large community events sponsored by HECO. On August 14 and 15, 2004, HECO promoted the Sun Power for Schools program at the Wai'anae Sunset on the Beach, with an estimated attendance of 50,000 people at the event. On October 16, 2004, the Sun Power for Schools display and enrollment cards were also included in an exhibit on renewable energy at HECO's "Live Energy Lite" event at Ala Moana Center to celebrate October as Energy Awareness Month and to build awareness about energy and conservation. Approximately 15,000 people attended that event and participated in HECO's exhibits and activities.

- Continued to have *Sun Power for Schools* brochures and enrollment cards available for customers at the HECO office lobbies at Ward Avenue and Richards Street.

HELCO

- Featured the dedication of the *Sun Power for Schools* photovoltaic system at the Prince Jonah Kuhio Kalanianaole Elementary and Intermediate School in the July 2004 issue of *Consumer Lines* (customer newsletter provided with the monthly bills).

- Aired the *Sun Power for Schools* 30-second radio spot on the local radio stations, Hilo Broadcasting, New West Broadcasting, and Pacific Radio Group.

- Continued to have the *Sun Power for Schools* brochures and enrollment cards available for customers at the HELCO office lobbies in Hilo, Waimea, and Kona.

- Distributed *Sun Power for Schools* brochures and featured a display of two Waiakea

Intermediate School students' PowerQuest research projects at the HELCO in Our Community Energy Fair on October 2, 2004 and Energy Exhibition from October 4 to 7, 2004 at the Wailoa Center. An article about the display was also featured in the Hawaii Tribune Herald.

- HELCO continues to distribute copies of the *Sun Power for Schools* curriculum, PowerQuest, to public and private school teachers upon request.

- Distributed *Sun Power for Schools* brochures at HELCO's booth at the Hawaii State Teachers' Institute Day Exposition on October 14, 2004 at Keaau High School.

- Featured the *Sun Power for Schools* program in the November 2004 issue of *Consumer Lines* (customer newsletter provided with the monthly bills) along with postage-paid reply cards for customers to sign up.

MECO

- Featured the *Sun Power for Schools* program in the November 2004 issue of *Consumer Lines* (customer newsletter provided with the monthly bills) along with postage-paid reply cards for customers to sign up.

- MECO continues to distribute copies of the *Sun Power for Schools* curriculum, PowerQuest, to public and private school teachers upon request.

- *Sun Power for Schools* brochures and enrollment cards are prominently displayed in the MECO lobby in Kahului and available for customers to take with them or inquire about.

PROJECT STATUS

GENERAL

Information and photographs about the *Sun Power for Schools* PV installations are located on the HECO web page (http://www.heco.com) and MECO web page (http://www.mauielectric.com). The data collected from each site are also available and formatted for student use, processing, evaluation, and analysis.

Based upon the direction of the DOE, public middle schools were targeted for [redacted]

Schools PV installations in 2004 and will continue to be the focus in 2005-2006. Major highlights from July 1, 2004 to December 31, 2004 include:

- On August, 27, 2004, proposals for a grid-connect PV system (shade structure utilizing both multi-crystalline and amorphous building integrated PV modules) at Lanai High and Elementary School were requested by MECO. A contractor was selected and MECO is moving forward with installation.

- On October 19, 2004, the HECO utilities notified the HPUC that the *Sun Power for Schools* program will be extended another two years (2005-2006). Memoranda of Understandings have been executed between the DOE and HECO, HELCO, and MECO for this extension.

- On November 19, 2004, two PV area lighting systems were installed at Kapolei Middle

HECO

A summary of the data from the HECO 2 kW PV systems is presented in Table 1.

Table 1
Summary of HECO 2 kW PV Systems

	Average kWh/day Produced														
High	Date														

Table 1 (cont.)
Summary of HECO 2 kW PV Systems

Average kWh/day Produced

High School	Date Installed	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mililani	1/7/99	1999	7.2	9.9	10.5	11.9	10.5	11.4	10.9	11.9	12.2	9.3	8.2	6.3
		2000	8.5	9.9	10.7	10.3	11.5	12.2	11.7	11.9	10.5	10.3	8.3	7.6
		2001	8.4	9.0	9.9	10.8	10.8	0.1**	**	**	3.5**	9.1	7.1	7.0
		2002	**	**	**	**	**	**	**	**	**	**	**	**
		2003	**	**	**	**	**	**	**	**	**	**	**	**
		2004[A]		**	**	**	0.3**	6.3	7.2	6.5	6.8	5.7	4.5	3.9
Waialua	2/10/99	1999		9.1	8.5	10.0	9.5	10.5	7.7	10.6	10.2	6.2	*	*
		2000	2.6*	8.8	7.0	8.5	10.1	10.5	9.3	9.3	8.5	9.0	*	*
		2001	*	5.8	1.8**	**	**	**	**	**	**	**	**	**
		2002	**	**	**	**	**	**	**	**	**	**	**	**
		2003	**	**	**	**	**	**	**	**	**	**	**	**
		2004	**	**	**	*	*	*	*	*	4.8*	5.3*	6.1*	6.0
Castle	8/18/99	1999								9.9	8.9	6.9	5.5	4.8
		2000	5.4	7.7	7.9	7.4	9.6	10.0	7.9	8.1	7.4	6.8	5.1	6.0
		2001	5.8	6.2	4.7	4.8	8.7	8.7	9.3	8.3	8.1	6.5	5.7	4.7
		2002	5.5	6.2	6.4	7.4	7.6	8.8	8.0	7.5	7.9	6.2	5.8	5.7
		2003	5.9	6.6	6.5	8.0	8.8	8.6	8.2	8.3	8.5	7.2	5.4	4.0
		2004	5.7	5.3	5.3	6.6	6.4	7.8	8.2	7.3	7.6	6.2	4.6	4.5
Kahuku	10/25/00	2000										1.4	6.6	6.5
		2001	6.6	7.0	8.8	9.5	11.3	10.8	11.5	10.2	9.5	7.4	6.2	5.4
		2002	5.8	7.5	7.6	9.6	10.0	11.2	10.7	10.0	10.1	7.7	6.8	6.5
		2003	6.2	7.8	8.5	10.6	11.3	10.7	11.1	10.9	9.8	8.4	6.7	5.1
		2004	6.3	6.9	7.8	10.1	9.6	10.1	10.3	9.3	9.1	7.9	5.6	4.9

* Some or all data unavailable due to facility renovations, telephone or other technical problems at high school.
** Some or all data unavailable due to voluntary system shut down.
[A] Output lower than expected due to damaged PV panel.

Locations for a nominal 2 kW grid-connected PV system at Jarrett Intermediate School, Waianae Intermediate School, Highlands Intermediate School, and Nanakuli High/Intermediate School have been identified and approved by the schools and DOE. A Request for Quotations (RFQ) for a "turn Key" PV system at each of these schools was released by HECO on December 21, 2004. Bids are due to HECO on January 31, 2005, with installations targeted for the second quarter of 2005.

The PV system at Kaimuki High School remains disconnected due to ongoing renovations at the school.

A new analog telephone line was installed at Kahuku High School in December 2004. In addition, the existing telephone line at Waialua High School was repaired in December 2004. These actions continue the capability to remotely collect data from the PV data acquisition systems. Efforts to re-establish data communications at Waianae High School continue.

On November 19, 2004, two (2) off-grid PV area lighting systems at Kapolei Middle School were installed. One system was installed on the gate post to the entrance of Building C (Cultural Center) and one system was mounted on the wall and fence of the play court (see Figures 1 and 2). Each

PV lighting system consists of a 65-watt PV panel, an 80 amp-hour battery, battery charger/lighting controller, and a 26-watt compact fluorescent lamp. Locations were approved by the school to provide additional lighting in the areas.

Figure 1. PV area lighting system mounted on gate post at entrance to Building C (Kapolei Middle School).

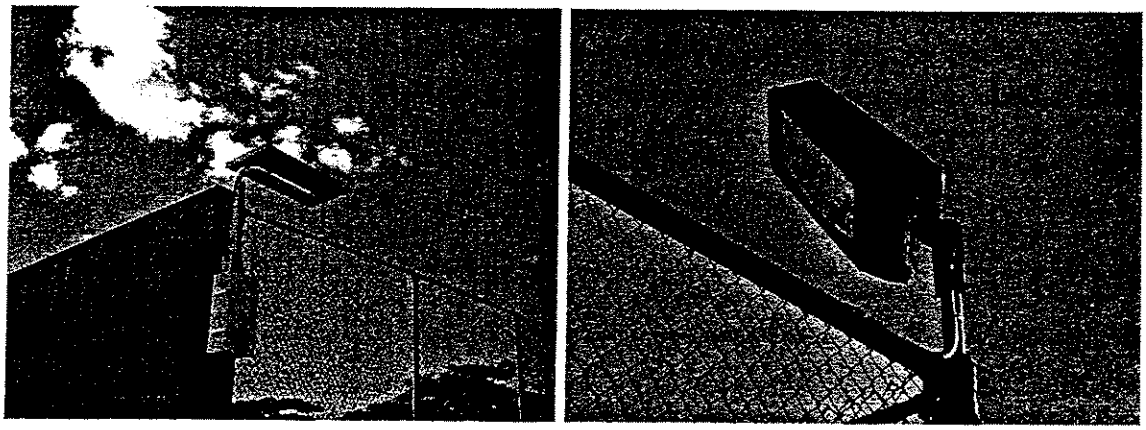

Figure 2. PV area lighting system on play court (Kapolei Middle School) – PV panel with battery and charge controller mounted on play court wall (left) and lamp fixture mounted on fence post (right).

HELCO

A summary of the data from the HELCO 1 kW PV systems is presented in Table 2.

Table 2
Summary of HELCO 1 kW PV Systems

Average kWh/day Produced

High School	Date Installed	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kealakehe	7/30/98	1998							*	*	3.0	3.4	3.0	2.9
		1999	2.9	3.3	2.9	3.2	2.4	2.4	3.1	3.4	**	**	2.9	**
		2000	**	3.0	3.1	2.9	2.3	2.9	1.0**	1.3**	3.2	3.3	3.0	3.4
		2001	3.0	2.9	3.2	2.9	3.0	2.7	2.8	3.1	3.1	3.3	2.8	3.0[A]
		2002	[A]	[A]	[A]	[A]	[A]	1.0[A]	2.6	2.6	2.8	2.5	2.5	2.7**
		2003	3.1	2.3[B]	[B]	[B]	[B]	[B]	[B]	[B]	[B]	[B]	[B]	[B]
		2004	[B]	[B]	[B]	[B]	[B]	[B]	0.4[B]	3.3	3.8	3.8	3.4	3.5
[illegible]	[illegible]	[illegible]												*

MECO

A summary of the data from the MECO 1 kW PV systems is presented in Table 3.

Table 3
Summary of MECO 1 kW PV Systems

Average kWh/day Produced

High School	Date Installed	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Baldwin	10/3/97	1997										1.4	2.9	3.2
		1998	3.6	4.3	4.3	2.9	3.4	3.1	3.5	3.7	4.0	3.7	3.6	3.4
		1999	3.5	4.0	4.2	4.4	3.9	3.4	2.6	2.5	3.5	3.7	3.3	3.0
		2000	3.5	4.0	2.4	3.8	3.7	2.6	3.0	3.2	3.4	3.6	3.1	2.9
		2001	3.2	2.5	3.9	3.7	3.4	3.2	3.0	3.4	3.5	3.4	2.6	**
		2002	**	**	**	**	**	1.6**	2.8	2.0*	*	*	*	*
		2003	*	*	*	*	*	*	*	1.3*	3.4	3.0	3.0	2.5
		2004	3.0	3.3	2.8	1.0*	3.0	1.5[A]	[A]	[A]	[A]	[A]	1.1[A]	2.7
Molokai	5/21/99	1999						5.6	5.2	5.7	5.8	5.0	2.2	*
		2000	2.7	4.2	5.5	5.5	5.8	5.8	3.9	5.2	5.6	5.3	4.6	0.9
		2001	*	*	*	*	*	*	*	*	*	*	*	*
		2002	*	*	*	*	*	*	*	*	*	*	*	*
		2003	*	*	*	*	*	*	*	*	*	*	*	*
		2004	*	*	*	*	3.1*[B]	2.9*[B]	*	*	*	*	*	*

* Data unavailable due to telephone problems at high school.
** Some or all data unavailable due to voluntary system shut down (in response to Underwriters Laboratories product alert).
[A] Some or all data unavailable due to system shut down by school to accommodate facility upgrades.
[B] Data manually downloaded from system.

MECO continues to troubleshoot and evaluate the operation of a wireless spread spectrum radio equipment at Molokai High School. This equipment was installed to relay PV system data to MECO's Puu Nana Radio site for connection to an available telephone line, thus re-establishing data communications with the PV system. (Suitable telephone lines were not made available by Molokai High School after the conversion of the school's telephone system to a digital network).

The PV system at Baldwin High School was re-energized in November 2004. The PV system was temporarily disconnected due to construction and renovation work at the school.

A Request for Proposals (RFP) for two PV systems, utilizing multi-crystalline and amorphous silicon PV modules, was released by MECO on August 27, 2004. Rising Sun Electric was selected through the RFP process. MECO is now in the process of installing two 1.25 kW PV systems at Lanai High and Elementary School. The first system will use "triple-junction" amorphous modules. The second system will use single crystal modules. The project will be conducting a side-by-side comparison of the performance of these two types of modules under the partly cloudy conditions typically found on Lanai. Each array will have its own grid-tied inverter and each will be fully monitored for real-time output as well as for logged performance over time. The environmental factors of solar radiation and temperature will also be monitored for correlation to the collected solar performance data. MECO expects to be able to test data collection in the second quarter of 2005. Funding for this project will come from Electric Power Research Institute (EPRI) research and development funds.

PARTICIPATION

GENERAL

Based on a review of the results of other utility green pricing programs in the U.S. mainland (0.3 percent to 1.8 percent customer participation rate), HECO utilities, in December 1996, set a goal of 1 percent participation rate from its customers. The HECO utilities' projected total annual contribution of $88,000 per year is based on the projected 1 percent rate for residential and commercial customers and an average annual contribution of $24 per participant.

Table 4 shows an updated summary of the number of participants and percentage of participation from our customers and employees. The total number of participants as of December 31, 2004 increased by about 5% compared to the total participants for the first-half of 2004 (up to 6/30/04). To date, the average percentage of the HECO utilities' participants in the *Sun Power for Schools* program is 0.95 percent. Employee participation rates were significantly higher, ranging from 4.25 percent to 8.68 percent.

Table 4
Summary of *Sun Power for Schools* Participation
(as of December 31, 2004)

	Monthly	One-time	Other	Total	% of Customer Participation	% of Employee Participation
HECO						
Employees	101	27	0	128		
Customers	1,975	666	0	2,641		
Subtotal	2,076	693	0	2,769	0.96	6.38
HELCO						
Employees	28	10	0	38		
Customers	477	140	0	617		
Subtotal	505	150	0	655	0.91	8.68
MECO						
Employees	14	4	0	18		
Customers	315	248	0	563		
Subtotal	329	252	0	581	0.94	4.25
TOTAL	2,910	1,095	0	4,005	0.95	6.42

HECO

Table 5 shows an updated summary of estimated annual contributions from the HECO *Sun Power for Schools* contributions. The estimated annual total of monthly contributions and one-time contributions is approximately $79,876. This is equivalent to an annual amount of about $29 per participant.

About 75 percent of the contributors to *Sun Power for Schools* utilize the monthly contributions method. Approximately 74 percent of the monthly contributors provide contributions in the $1 to $2 range.

HELCO

Table 6 shows an updated summary of estimated annual contributions from the HELCO *Sun Power for Schools* contributions. The estimated annual total of monthly contributions and one-time contributions is approximately $20,672. This is equivalent to an annual amount of about $32 per participant.

About 77 percent of the contributors to *Sun Power for Schools* utilize the monthly contributions method. Approximately 70 percent of the monthly contributors provide contributions in the $1 to $2 range.

MECO

Table 7 shows an updated summary of estimated annual contributions from the MECO *Sun Power for Schools* contributions. The estimated annual total of monthly contributions and one-time contributions is approximately $21,221. This is equivalent to an annual amount of about $36 per participant.

About 57 percent of the contributors to *Sun Power for Schools* utilize the monthly contributions method. Approximately 73 percent of the monthly contributors provide contributions in the $1 to $2 range.

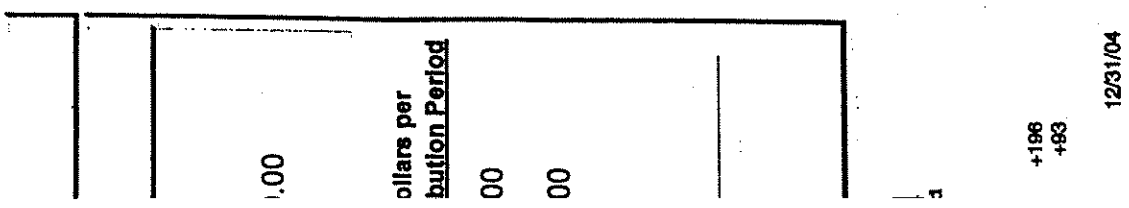
.00
ollars per
bution Period
00
00
+196
+83
12/31/04

Table 6 – Covering Period from 1/1/99 to 12/31/04

Sun Power For Schools
HELCO Statistics Summary
Program Cumulative
Contribution Totals

Total Contributing Customers Count 655

Monthly Contributions

Contribution Count	505
Total Dollars Contributed Per Month	$1,310.00

	Count	
$1 / Month	176	
$2 / Month	179	
$5 / Month	68	
$10 / Month	27	
Other $ / Month	55	Max $4.0

Estimated Yearly *Total Dollars $15,720.00

One Time Contributions

Contribution Count	150
Total Dollars	$4,952.00
Average	$33.00
Minimum	$2.00
Maximum	$500.00

Yearly Total Dollars $4,952.00

Other Contributions

Contribution Count	0
Total Dollars:	$0.00

	Count	Dollars per Contribution Period
Quarterly	0	$0.00
Semi-Annually	0	$0.00

Estimated Yearly **Total Dollars $0.00

Estimated Yearly Grand Total Dollars $20,672.00

* - Monthly contributions have been multiplied by 12 months
** - Semi-Annual contributions have been multiplied by 2, and Quarterly contributions by 4.

NOTE: New Contributing Customers for Calendar Year 2004: Monthly Contributions, +54
One Time Contributions, +25

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MECO TOTAL

Sun Power For Schools
MECO Statistics Summary

Program Cumulative

Contribution Totals

Total Contributing Customers Count 582

Monthly Contributions

Contribution Count	330
Total Dollars Contributed Per Month	$779

	Count	
$1 / Month	136	
$2 / Month	105	
$5 / Month	51	
$10 / Month	7	
Other $ / Month	36	Max $3

Estimated Yearly *Total Dollars	$9,348.00

One Time Contributions

Contribution Count	252
Total Dollars	$11,873
Average	$48
Minimum	$1
Maximum	$360
Yearly Total Dollars	$11,873

Other Contributions

Contribution Count	0
Total Dollars:	$0

	Count	Dollars per Contribution Period
Quarterly	0	$0
Semi-Annually	0	$0

Estimated Yearly **Total Dollars	$0.00

Estimated Yearly Grand Total Dollars	$21,221.00

* - Monthly contributions have been multiplied by 12 months
** - Semi-Annual contributions have been multiplied by 2, and Quarterly contributions by 4.

NOTE: New Contributing Customers for Calendar Year 2004: Monthly Contributions, +22
One Time Contributions, +37

Printed 1/11/2005 10:51:09 AM Statistics as of December 31, 2004

EXPENDITURES

HECO

Table 8 shows a summary of funding sources and expenditures for the HECO *Sun Power for Schools* program. The sum of annual forecasted dollars, utility and UPVG contributions, and expenditures for the high school installations are shown.

Table 8
HECO Sun Power For Schools (SPS)
Income Statement
For the Period From Inception to December 31, 2004

Funds Available For SPS Projects:	
HECO Pledge Commitment	$100,000
Billed Community SPS Pledges	$270,853
UPVG Funding (Note 1)	$27,845
	$398,698
Funds Expended For SPS Projects (Note 2):	
Kaimuki High School	$23,654
McKinley High School	$24,881
Waianae High School	$24,306
Waipahu High School	$20,250
Campbell High School	$22,004
Mililani High School	$21,674
Waialua High School	$25,056
Castle High School	$30,911
Kahuku High School	$32,893
Inverter/communications replacement	$27,700
Kapolei Middle School (Note 3)	$9,861
	$263,190
Net Funds Available For SPS Projects:	$135,508

Note 1: Utility Photovoltaic Group (UPVG) funding for the *Sun Power for Schools* program is based on the number of PV kW installed for PV hardware and associated equipment.

Note 2: Funds expended for SPS projects include costs for PV hardware and associated equipment, County permit application fee, and contractor installation. It does not include in-kind contributions from the utility. These costs have been adjusted from previous reports due to reconciliation of project costs with the subcontractor.

Note 3: Two off-grid area lighting systems (PV/battery/light) were installed at Kapolei Middle School on November 19, 2004.

The detailed costs for the HECO high school PV installations are shown in Table 9. The total installed average cost per high school (2 kW) is about $41,880 or $20,940 per installed kilowatt. Excluding the HECO in-kind services and data system reduces the average cost to about $12,722 per installed kilowatt. The Kapolei installation is an off-grid area lighting system (PV with battery).

Table 9
HECO Detailed Cost for PV Installations

High School	Hardware	Installation	Data System	Other	HECO In-Kind	Total costs	Total cost, $/kW	Total costs (excluding in-kind service and data system), $/kW
Kaimuki	$16,353	$4,172	$3,000	$129	$21,061	$44,715	$22,358	$10,327
McKinley	$15,417	$6,870	$2,500	$94	$13,396	$38,277	$19,139	$11,191
Waianae	$15,633	$6,079	$2,500	$94	$12,231	$36,537	$18,269	$10,903
Waipahu	$15,348	$2,308	$2,500	$94	$9,851	$30,101	$15,051	$8,875
Campbell	$15,742	$3,668	$2,500	$94	$9,868	$31,872	$15,936	$9,752
Mililani	$15,167	$3,913	$2,500	$94	$14,167	$35,841	$17,921	$9,587
Waialua	$15,413	$7,049	$2,500	$94	$12,589	$37,645	$18,823	$11,278
Castle	$21,557	$6,110	$3,150	$94	$10,799	$41, 710	$20, 855	$13,881
Kahuku	$18,960	$10,624	$3,180	$129	$15,905	$48,798	$24,399	$14,857
Inverter/ communications replacement	$22,292	$5,408	$0	$0	$2,601	$30,301	N/A	N/A
Kapolei	$4,713	$5,119	$0	$29	$8,987	$18,848	N/A	N/A
TOTAL	$176,595	$61,320	$24,330	$945	$132,579	$395,769		

N/A: Not Applicable (inverter replacement only and off-grid PV area lighting system at Kapolei)

HECO in-kind contributions (labor and related expenses) for engineering design (structural and electrical), drafting and project management averaged $12,899 per installation. In general, these costs have decreased as experience has been gained with each subsequent PV installation. However, some high schools, including Mililani, Waialua, and Kahuku, incurred higher costs. Higher costs were encountered because multiple site visits were required and several alternative designs for different sites at the schools had to be developed before DOE, Department of Accounting and General Services and high school officials approved the location and final design. In the case of Kahuku, redesign efforts were needed to modify the roof attachments in order to comply with conditions specified in the school building roof warranty. In addition, more expensive stainless steel support and mounting components were employed for corrosion protection.

HECO also provided in-kind contributions for [redacted]

HELCO

Table 10 shows a summary of funding sources and expenditures for the HELCO *Sun Power for Schools* program. The sum of annual forecasted dollars, utility contributions, and expenditures for the high schools are shown.

Table 10
HELCO Sun Power For Schools (SPS)
Income Statement
For the Period From Inception to December 31, 2004

Funds Available For SPS Projects (Note 1):	
HELCO Pledge Commitment	$20,000
Billed Community SPS Pledge	$67,567
Million Solar Roofs Grant	$10,400
	$97,967
Funds Expended For SPS Projects (Note 2):	
Kealakehe High School	$19,388
Hilo High School	$17,542
Laupahoehoe High School (Note 3)	$9,970
Kalanianaole Elementary and Intermediate School	$18,879
	$65,779
Net Funds Available For SPS Projects:	$32,188

Note 1: HELCO has elected not to participate in the Utilities Photovoltaic Group project.

Note 2: Funds expended for SPS projects include costs for PV hardware and associated equipment, County permit application fee, and contractor installation. It does not include in-kind contributions from the utility. These costs have been adjusted from previous reports due to reconciliation of project costs with the subcontractor.

Note 3: An off-grid area lighting system (PV/battery/light) was installed at Laupahoehoe High School on February 23, 2001.

The detailed costs for the HELCO high school PV installations are shown in Table 11. The average total installed cost per high school (1 kW grid-connected system) is about $21,085 per installed kilowatt. Excluding the HELCO in-kind services and data system reduces the average cost to $12,253 per installed kilowatt. The Laupahoehoe installation is an off-grid area lighting system (PV with battery).

Table 11
HELCO Detailed Cost for PV Installations

High School	Hardware	Installation	Data System	Other	HELCO In-Kind	Total costs	Total cost, $/kW	Total cost (excluding in-kind service and data system), $/kW
Kealakehe	$11,888	$2,000	$5,500	$0	$5,472	$24,860	$24,860	$13,888
Hilo	$13,542	$0	$4,000	$0	$5,472	$23,014	$23,014	$13,542
Laupahoehoe	$6,815	$2,530	$625	$0	$2,768	$12,738	N/A	N/A

HELCO in-kind contributions per high school (labor and related expenses) for project management averaged $3,829. These in-kind costs are lower since these installations were turnkey projects (design, procurement, permitting, and installation) with local contractors.

In addition, HELCO in-kind contributions (not included in Table 11) for general *Sun Power for Schools* related expenses totaled $103,892. This included $45,869 for copy design, printing, marketing, advertising, and other activities related to communicating this program to our customers and $58,023 for general program operation and maintenance, curriculum development, and miscellaneous items. These expenses cover the period from October 1996 (*Sun Power for Schools* kick-off) to December 31, 2004.

MECO

Table 12 shows a summary of funding sources and expenditures for the MECO *Sun Power for Schools* program. The sum of annual forecasted dollars, utility contribution, and expenditures for the high school installations are shown.

Table 12
MECO Sun Power For Schools (SPS)
Income Statement
For the Period From Inception to December 31, 2004

Funds Available For SPS Projects:	
MECO Pledge Commitment	$20,000
Billed Community SPS Pledges	$63,352
UPVG funding (Note 1)	$3,400
	$86,752
Funds Expended For SPS Projects (Note 2):	
Baldwin High School	$17,661
Molokai High School	$18,819
Lahainaluna High School (Note 3)	$5,606
Lokelani Middle School (Note 3)	$3,923
Maui Waena Middle School (Note 3)	$6,485
Iao Intermediate School (Note 3)	$7,633
	$60,127
Net Funds Available For SPS Projects:	$26,625

Note 1: Utility Photovoltaic Group (UPVG) funding for the Sun Power for Schools program is based on the number of PV kW installed for PV hardware and associated equipment.

Note 2: Funds expended for SPS projects include costs for PV hardware and associated equipment, County permit application fee, and contractor installation. It does not include in-kind contributions from the utility.

Note 3: Off-grid area lighting systems (PV/battery/light) were installed at Lahainaluna High School on September 8, 2000, Lokelani Middle School on February 19, 2002, Maui Waena Middle School on March 26, 2002, and Iao Intermediate School on June 13, 2003.

The detailed costs for the MECO high school PV installations are shown in Table 13. The average total installed cost per high school (1 kW grid-connected system) is about $30,564 per installed kilowatt. Excluding the MECO in-kind services and data system reduces the average cost to $15,740 per installed kilowatt. The Lahainaluna, Lokelani, Maui Waena, and Iao installations are off-grid area lighting systems (PV with battery).

Table 13
MECO Detailed Cost for PV Installations

High School	Hardware	Installation	Data System	Other	MECO in-Kind	Total costs	Total cost, $/kW	Total costs (excluding in-kind service and data system), $/kW
Baldwin	$11,161	$4,000	$2,500	$0	$18,236	$35,897	$35,897	$15,161
Molokai	$11,713	$4,606	$2,500	$0	$12,934	$31,753	$31,753	$16,445
Lahainaluna	$2,499	$3,092	$0	$15	$0	$5,606	N/A	N/A
Lokelani	$2,063	$1,840	$0	$20	$5,247	$9,170	N/A	N/A
[redacted]								

MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING (the "Agreement"), made and entered into as of this Eighth day of November 2004 by and between the STATE OF HAWAII DEPARTMENT OF EDUCATION, hereinafter referred to as "DOE," and HAWAIIAN ELECTRIC COMPANY, INC., hereinafter referred to as "HECO."

WITNESSETH

WHEREAS, "photovoltaics" refers to the technology in which radiant energy from the sun is converted to electrical energy; and

WHEREAS; HECO is promoting the concept of photovoltaic power systems as an alternative to conventional fuels; and

WHEREAS, HECO and DOE entered into that certain Agreement dated June 5, 1997 to implement the Sun Power for Schools Pilot Project, and extended the Sun Power for Schools Project by Agreements dated April 20, 1999, December 28, 2000, and October 1, 2002 where electric utility customers and non-customers were given the opportunity to make voluntary contributions to encourage the development of renewable energy; and

WHEREAS, HECO anticipates completing by year-end 2004 the installation of photovoltaic power systems on the roofs of specially selected DOE approved school buildings in accordance with Section 1 of said Agreement dated October 1, 2002; and

WHEREAS, in recognition of the great continuing success of this project, HECO desires to continue its green pricing program through the Sun Power for Schools Project under the terms and conditions of this Agreement; and

WHEREAS, the terms and conditions of this Agreement are separate from and do not in any way modify or amend said Agreements dated June 5, 1997, April 20, 1999 December 28, 2000, and October 1, 2002; and

WHEREAS, the continuation of the Sun Power for Schools Project would be implemented subject to PUC approval where appropriate; and

WHEREAS, HECO will continue to collect and control disbursement of voluntary contributions in a Sun Power for Schools fund; and

WHEREAS, HECO will also contribute in-kind services to the Sun Power for Schools Project; and

WHEREAS, HECO desires to use Sun Power for Schools funds to install grid-connected or non-grid-connected photovoltaic power systems (each a "SYSTEM," together, the "SYSTEMS") on the roofs of specially selected DOE approved school buildings or school grounds on Oahu, (each a "FACILITY," together, the "FACILITIES"); and

WHEREAS, the DOE curriculum programs now include Environmental Issues and Actions, National Energy Education development, Solar Car Race, Power Quest and other programs which are compatible with the Sun Power for Schools Project in their focus on energy and the environment; and

WHEREAS, the parties are desirous of entering into this Agreement with respect to the Sun Power for Schools Project prescribing the rights and obligations of and between HECO and DOE.

NOW, THEREFORE, the parties hereto, in consideration of the mutual promises and agreements herein contained, hereby agree as follows:

1. **Performance of the Work.** To the extent sufficient Sun Power for Schools funds are available, HECO shall install grid-connected or non-grid-connected photovoltaic system(s) on the FACILITIES (DOE approved rooftops of school buildings or school grounds). HECO or its representatives shall use good engineering practice to perform the installation. Any such SYSTEM installations shall take place in 2005 and 2006 on FACILITIES in the HECO service areas (i.e., Oahu).

   The total number of SYSTEMS to be installed will be a function of the amount of voluntary contributions collected from electric utility customers and non-customers and the type and cost of each SYSTEM installed on the school FACILITY.

   Engineering drawings and specifications shall have the approval of DOE prior to installation.

2. **TERM of Agreement.** The Term of this agreement shall expire two (2) years from the date of the last SYSTEM installation in 2006.

3. **Ownership of System.** Upon installation, ownership of each SYSTEM installed on a FACILITY shall pass automatically to DOE. DOE shall acknowledge ownership of the SYSTEM in writing within ten (10) working days of HECO's notice of completion.

4. **Operation and Maintenance of the SYSTEM.** HECO will operate and maintain each SYSTEM for two (2) years after installation. DOE shall, during the two year period in which HECO operates and maintains the SYSTEM, allow HECO entry onto the FACILITY at reasonable times for the purpose of monitoring, operating, and maintaining the SYSTEM.

   Following such two (2) year period, DOE will operate and maintain the SYSTEM. The cost of any repairs or replacement to the SYSTEM outside any manufacturer's warranties shall be borne by DOE. HECO will assist on an as-needed basis. DOE may elect not to repair or replace a damaged SYSTEM.

5. **FACILITY Selection.** The selection of schools where HECO shall install a SYSTEM on a FACILITY will be as follows:
   a) DOE shall provide a listing of candidate schools, which have strong existing curriculum, related to energy and environment on Oahu;

b) HECO shall review the listing of candidate schools and [redacted]

a) Providing printing assistance of educational material guides and in-house publications;
b) Providing resource personnel for workshop training/mentorship; and
c) Reviewing school publicity materials.

9. **Laws, Regulations and Public Ordinances.** HECO and its representatives shall comply with federal, state, and local statutes, regulations and public ordinances of any nature governing the installation work.

10. **Electricity Production from the SYSTEM.** Electricity produced by the SYSTEM may be utilized by the FACILITY to reduce its electricity consumption and peak electric demand. There shall be no charge to DOE by HECO for the use of such electricity.

11. **Restoration of Surface and Improvements.** After the SYSTEM installation and during the two (2) years of HECO's operation and maintenance of said SYSTEM, HECO shall repair or replace any damage to improvements on or appurtenant to the FACILITY which are directly caused by installation of the SYSTEM by or on behalf of HECO, including restoring the surface of the FACILITY to a condition similar to that which existed prior to the commencement of such work, or compensate DOE for any damage to said improvements or grounds directly caused by or arising from installation of the SYSTEM by or on behalf of HECO. Upon the termination or expiration of this Agreement, DOE shall be responsible for any and all restoration of FACILITIES.

If after SYSTEM installation and during the two (2) years of HECO operation and maintenance of said SYSTEM, DOE desires to remove said SYSTEM from a FACILITY, DOE shall so inform HECO who then may choose to remove the SYSTEM at no cost to DOE. Upon removal by HECO, ownership of the SYSTEM shall automatically vest in HECO. If HECO does not choose to remove and take ownership of the SYSTEMS, DOE may do so at DOE cost, and ownership of the SYSTEMS shall remain with DOE.

12. **FACILITY Repairs and Renovations.** In the event it becomes necessary for the DOE at any time to maintain, operate, repair or renovate the FACILITY or its roof, the cost to remove and reinstall the SYSTEM will be borne by DOE.

13. **Site Entry.** HECO and its representatives shall obtain permission from and coordinate with the school for the right of ingress and egress onto the DOE property and into the FACILITY for the purpose of installing the SYSTEM, collecting data from and monitoring the performance of the equipment and periodically inspecting the SYSTEM for maintenance needs and performing such maintenance.

14. **Risk of Loss of SYSTEM.** All SYSTEM equipment, materials and supplies provided by HECO or its representatives and located on or within the FACILITY during and after SYSTEM installation shall be used or stored at the sole risk of DOE and HECO shall not be responsible or liable for any loss of, or damage to, the aforesaid items, except in the case of negligence or willful misconduct by an employee or agent of HECO. DOE will provide reasonable security to safeguard the SYSTEM.

15. **No Warranty, Indemnification.** The DOE shall be responsible for damages or injury caused by the DOE's agents, officers, and employees in the course of their employment to the extent that the DOE's liability for such damage or

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

HAWAIIAN ELECTRIC COMPANY, INC.

NS By: Karl Stahlkopf
Karl E. Stahlkopf
Senior Vice President, Energy Solutions

STATE OF HAWAII
DEPARTMENT OF EDUCATION

By: Patricia Hamamoto
Patricia Hamamoto
Superintendent

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MOU) is made and entered into effective December 11, 2003 by and between the University of Hawaii on behalf of its' College of Business Administration and Molecular Biosciences and Bioengineering Department (hereinafter UH), Alexander & Baldwin, Inc., through its division Hawaiian Commercial & Sugar Company (hereinafter HC&S), and the Hawaiian Electric Company, Inc. (hereinafter HECO). UH, HC&S and HECO may be referred to individually as "Party" and collectively as "Parties."

WITNESSETH

WHEREAS, UH is recognized for its expertise and research in the areas of business

[redacted]

administration, economics, and renewable energy, including biomass energy, and

WHEREAS, HC&S is recognized as the leading sugar producer in the State of Hawaii that grows sugar cane and processes sugar for commercial markets and generates electricity from a sugar cane byproduct, bagasse, on the island of Maui, and for its general respect for the environment and specific interest in seeking ways to reduce open field burning, and

WHEREAS, HECO, provider of electricity to 95% of the state's residents on the islands of Oahu, Maui, Hawaii, Lanai and Molokai, has a strategy to reduce oil dependence by increasing renewable energy generation and decreasing energy demand through conservation and energy efficiency programs, and is recognized as a leader in renewable energy research, development and demonstration in Hawaii, and

WHEREAS, this commitment by HECO has led to the integration of 112 megawatts of renewable energy generation on its electric systems, negotiations with developers for three new wind farm projects, national leadership in solar water heating

- improve understanding of biomass power technologies and operations;
- improve understanding of the economics and policy considerations of utilizing indigenous renewable resources;
- promote the development and deployment of biomass power technologies; and
- promote incentives and policies that support the development of biomass technologies and operations.

THE PARTIES NOW HEREBY ENDEAVOR to pursue the following undertakings hereinafter recited.

The goal of this MOU is to promote opportunities for cooperation and collaboration among the Parties.

The objectives of this MOU are to:

- accelerate commercialization and deployment of biomass power technologies and operations;
- promote collaborative efforts among industry, utilities, governmental agencies, universities and national research institutes that may encourage the development and deployment of biomass power technologies and operations; and
- seek price support mechanisms, funding and long-term strategies to meet these objectives.

With respect to the above objectives, the Parties intend to pursue the following when of mutual interest:

- support research, development and demonstration efforts of the other Parties;
- inform each other of potential collaborative opportunities;
- jointly develop and submit proposals to third parties for the support of collaborative research, development and demonstration efforts; and
- regularly communicate respective program accomplishments, goals, and initiatives in support of increased understanding of the respective Party's capabilities and contributions.

This MOU is not intended to be a binding and enforceable contract, but rather an expression of the Parties' intent to cooperate and collaborate with each other with regard to the objectives stated above. Nothing in this MOU shall be construed as limiting nor requiring the participation of any Party in individual projects or program opportunities. This MOU serves to provide a framework of cooperation and collaboration among the Parties, and does not limit the Parties in collaborating and cooperating with other research entities or any other parties. This MOU is further not intended to and shall not be interpreted to or in any way abridge, limit, or restrict the rights of the Parties to pursue, either independently or in conjunction with any other person or entity, business opportunities other than that agreed upon by the Parties.

UH, HC&S, and HECO are independent contractors and the Parties are not agents, joint venturers, or partners of the others and nothing in this MOU shall be deemed to constitute, create, give effect to, or otherwise recognize a joint venture, partnership, or formal business entity of any kind. Each Party shall maintain sole and exclusive control over its personnel and operations. Each Party shall bear all costs, expenses, risks and liabilities incurred by it arising out of or relating to its efforts or performance under this MOU. No Party will be liable for costs, expenses, risks, liabilities or other obligations incurred or undertaken by any other Party in connection with or arising out of its efforts or performance under this MOU.

In carrying out the terms of this MOU, it may be necessary for the Parties to provide proprietary and/ or confidential information to one another. In such event, the disclosure and use of all proprietary and/or confidential information shall be in accordance with a separate Non-Disclosure Agreement between the Parties.

UNIVERSITY OF HAWAII	**ALEXANDER & BALDWIN, INC., through its division HAWAIIAN COMMERCIAL & SUGAR COMPANY**	**HAWAIIAN ELECTRIC COMPANY, INC.**
By: James R. Gaines	By: C. Stephen Holaday	By: Karl E. Stahlkopf
Name: James R. Gaines	Name: C. Stephen Holaday	Name: Karl E. Stahlkopf
Title: Interim Vice President for Research	Title: Vice President	Title: Senior Vice President Energy Solutions & Chief Technology Officer

CA-IR-187

Ref: HECO Response to CA-IR-2, HECO T-6, Attachment 3M, Ho'okina Award Program.

Please provide the following information regarding this program for which expenses are included in the test year forecasted expenses:

a. Copies of all program guidelines, instructions and conditions.

b. Monthly actual program expenditures by NARUC Account incurred in each of the past three calendar years.

c. Explain how the "2003 Recycle," the "5/1/03 Adjustment" and the "2004-2005 Estimate" amounts were determined, with copies of all studies, analyses, workpapers and other documentation associated with the determination of such amounts.

HECO Response:

a. Information related to the Ho'okina Award Program for 2002, 2003, and 2004, is provided on pages 3-18 below. The material provided includes the Ho'okina Award Program and Award Criteria for each respective year. Revisions to the program as it evolved since 2002 are contained in the information provided. The Ho'okina program is administered by the Industrial Relations Department.

b. Monthly actual program expenditures by NARUC Account are not available because the expense is incurred when the awards are distributed in the March timeframe of the following year based on actual employee participation and qualification. The total 2005 test year Ho'okina Award budget for Other Production Operation Non-Projects-Direct Non-Labor expense is $80,640.

c. Please refer to CA-IR-2, HECO T-6, Attachment 3M, Page 3 of 3.

- 2003 Recycle – In October, 2002, the Industrial Relations Department who administers the Ho'okina program reduced the 2003 original budget of $487,500

by $199,000 to arrive at the $288,500 2003 revised budget by reducing the amount of the award per eligible employee from $375 to $200, for an estimated 1,440 employees. This was done to lower the budget amount for the program.

- 5/1/03 Adjustment – Based on the qualification criteria established in the "2003 Ho'okina Award Criteria Defined" document provided on pages 7-10 below, 810 employees out of 1440 employees met the program criteria in 2002 and received an award payout in March 2003. The budget amount based on $200 per employee was reduced in the 5/1/03 to reflect the actual payout.
- 2004-2005 Estimate – The same $200 per employee award amount is used every year. The 2004-2005 estimate was derived by slightly lowering the 2003 revised budget amount of $288,500 to $288,000, and allocating the $288,000 across Distribution Operations, Transmission Operations, Production Operations, and Admin & General areas, according to the percentage breakdown provided in CA-IR-2, HECO T-6, Attachment 3M, Page 3 of 3. The allocation percentages were based on the "6/03 Update" 2003 budget amounts.

HO'OKINA AWARDS 2002

For purposes of the Ho'okina Awards Program, the following are the definitions for the established criteria:

(A) Verbal Warnings – written verbal discipline for violations of Company policies and/or procedures issued to an employee as part of the Company's progressive discipline process.

(B) Lost Time Claim – all work-related injury or illness claims that restrict an employee from attendance at work during the award calendar year, and for which an employee is compensated with industrial injury pay.

Medical Attention Claim – a work-related injury or illness claim which does not restrict an employee from attendance at work during the award calendar year, but which requires medical treatment under a workers' compensation claim.

(C) Preventable Vehicle Incident – one involving a company vehicle, which after investigation, has been determined to be "preventable" under Company policy.

(D) Verified Customer Complaint – all complaints, from either internal or external customers, will be investigated and assessment made by Supervisors and Managers on validity and appropriate action. Complaints will be evaluated based on their impact to the business, and the frequency and validity of the complaint. The same considerations as those used when completing an employee's annual performance development evaluation.

(E) Community Service Activity/Event – use of personal time for voluntary physical participation in a Company-sponsored or non-profit, community sponsored activity or event, that is outside of normal work hours, and for which an employee is not paid or compensated. Industrial Relations will track employee participation for all Company-sponsored events. Employees are welcome to

Examples of "Eligible" Community Service Activities or Events:

- Sacrifice of personal time and active participation as a volunteer in a non-profit organization's charitable service (e.g. Hospice Hawaii, Shriner's Hospital for Children, Hawaii Literacy, American Red Cross, etc.)
- Lanakila Meals-on-Wheels volunteer
- Honolulu Homes for Habilitat Project volunteer
- Easter Seals or Muscular Dystrophy Telethon volunteer
- Special Olympic Games volunteer or coach
- Thanksgiving Dinner for the Homeless – Institute for Human Services
- March of Dimes Walk America – working volunteer to man the finish line, etc.
- Church sponsored events to benefit non-profit groups or charities (AIDS Prevention, American Red Cross, Catholic Charities, Hospice Hawaii, HI Centers for Independent Living, etc.)
- Coaching community leagues or school teams

Examples of "Ineligible" Community Service Activities or Events:

- Donations of goods, money, or time to make food for resale as a fundraiser for AUW, Thanksgiving Food Drives or Hawaii Food Bank Drives
- School-to-Work Program – done on paid, company time
- Participation in Fundraisers for Schools or Children's' Teams (including carnivals, sport teams, martial arts, hula, or other social clubs)
- Team parents for a child's team/club
- Participation as a runner, walker, bowler, etc. in charity events since compensation is given in the form of T-shirts, give-aways, etc. upon entry. Only time participation as an event organizer or event volunteer will be eligible.

Non-Company Sponsored Activities/Events – employees are required to provide a letter, or similar documentation, from the service organization to validate participation. They MUST turn this in to their Supervisor by the 12/31 deadline of the award calendar year to get credit. No exceptions will be made for late submissions.

Revised 4/01/02

Ho'okina Awards
"to persist, do continuously"

PROGRAM THRESHOLD

Company must meet all financial earnings goals.

PURPOSE

- To reward individual contributions and behavioral measures in the workplace that support our business objectives.

ELIGIBILITY

- All regular full time or part-time employees employed for 20 or more hours a week.
- You worked at least 1000 productive straight-time hours as a full-time employee (700 for part-time employees) during the calendar year.

  Productive straight-time hours include regular working hours, light duty work, and military leave. It excludes sick leave, workers' compensation, vacation, holidays, family and personal leaves, and long-term disability.

- You were still actively employed in an eligible position as of December 31, 2002.

  Employees who meet the criteria above and transferred to another HEI company and remained employed through December 31 of the calendar year will remain eligible based on their last position with the former utility company.

HO"OKINA CRITERIA DEFINED (See Ho'omaika'i website for definitions)	AWARD LEVEL 1	AWARD LEVEL 2
1. **Disciplinary or Corrective Actions for infractions during the award calendar year** 2. **Work-related Industrial Accidents, Illnesses, or Injuries** 3. **Preventable vehicle incidents**	1. No greater than one verbal warning 2. No lost time 3. None	1. None 2. No lost time and no medical attention 3. None
Customer Service Internal & External verified complaints	None	None
Community Service Voluntary physical participation in any non-profit organization or community event, that is done outside of normal work hours, and for which an employee is not paid or compensated. * Each employee must provide validation to their supervisor for eligible community service activities done outside of Company-sponsored events by 12/31 of program year for these to be eligible.	At least one event (Either Company-sponsored or eligible outside event/activity)	1. More than one event 2. Includes one Company-sponsored event

2002 AWARDS

- Based on 2002 performance
- Paid out first quarter of 2003

LEVEL 1: $75 check *

LEVEL 2: $375 check *

* All awards are less applicable taxes and deductions.

* HECO has the exclusive authority to determine policies and procedures, and reserves the right to terminate, amend, or modify the Ho'omaika'i Awards Programs at any time.

For additional information please contact Marleen Silva, Industrial Relations Department at Ph. 543-4658 or msilva@hei.com

Revised 4/2002

HO'OMAIKA'I AWARDS 2002

HECO Employee Recognition Programs

Hawaiian Electric Company
Maui Electric Company
Hawaii Electric Light Company

"It's not great ideas that succeed, it's great people who make them succeed."

Unknown

	NOMINATION & SELECTION DEADLINES	AWARD
of ary en	*Nomination Deadline:* 12/31 of each calendar year *Final Selection:* By the CEO. Given annually, but only when a deserving candidate has been identified.	1. $10,000 (less applicable taxes & deductions) 2. Trophy 3. Commendation Letter from the CEO
st rt	*Nomination Deadline:* Quarter end of each calendar year (3/31, 6/30, 9/30, & 12/31) *Final Selection:* By Exec. Staff by the 10th of the next month	Quarterly Team Award: Perpetual Trophy and plaque to one team within the following Process Areas: 1. Energy Delivery 2. Customer Operations/ General Counsel 3. Power Supply 4. Corporate Services Team Members: 1. Tangible Gift 2. Commendation Letter from the process area V.P
y t's	*Nomination Deadline:* 12/31 of each calendar year *Final Selection:* Presentation deadline of 30 business days from approval of the nomination	Non-monetary, tangible gift to an individual, or team of individuals
n. ry	*Final Selection:* By 8/15 of the year in which the award is earned *Delivery by:* 12/31	Jewelry, Koa, watches, golf clubs, or other gift item

Can an employee be nominated more than once in the same year?

Yes, multiple nominations are eligible if for different achievements within the same year. *Exception:* HECO will only honor employees with Mahalo Awards once within a five-year period for their long-term contributions to the same community organization(s).

What are some of the kinds of nominations that are *ineligible*?

- ✗ Incomplete nominations
- ✗ An employee's nomination for themselves
- ✗ Recognition for proposals of new products or process improvements that are already under active consideration by the Company or
- ✗ Recognition for proposals that address employee benefits, salary, discipline or collective bargaining issues, policies or procedures which may be legally required, and conditions of employment.

Who makes the final selection from all nominations received?

Industrial Relations will review, track, and approve all nominations that meet the established criteria for each program.

Who selects the Mahalo Award once a nomination is approved?

Employee's Supervisor/Manager. For Mahalo teams, each Manager either individually or jointly.

2003 HO'OKINA AWARD CRITERIA DEFINED

For purposes of the Ho'okina Awards Program, the following are the definitions for the established criteria:

(A) Disciplinary Action – any written Verbal Warning discipline for violations of Company policies, Company standard of conduct, behavior, or performance issued to an employee as part of the Company's Progressive Discipline Policy during the award calendar year.

(B) Lost Time Claim – a work-related injury or illness claim that restricts an employee from attendance at work during the award calendar year, and for which an employee is compensated with industrial injury pay.

Medical Attention Claim – a work-related injury or illness claim which does not restrict an employee from attendance at work during the award calendar year, but which requires medical treatment under a workers' compensation claim.

(C) Preventable Vehicle Incident – one involving a company vehicle during the award calendar year, which after investigation, has been determined to be "preventable" under Company policy.

(D) Verified Customer Complaint – all complaints, from either internal or external customers, will be investigated and assessment made by Supervisors and Managers on validity and appropriate action. All complaints during the award calendar year that resulted in disciplinary action of a written Verbal Warning and above, as defined under our Company's Progressive Discipline policy.

(E) Corporate Citizenship Activity – use of personal time for voluntary physical participation in any eligible Company-sponsored or eligible citizenship activity, only if it is done outside of normal work hours, and for which an employee is not paid or compensated. Examples are provided below.

Ho'okina is a corporate program that rewards corporate citizenship in support of our business objectives. It does not reward all the "personal" community service events that our employees participate in. The Company encourages employees to continue to volunteer for such individually meaningful causes.

The Company recognizes that making the time to volunteer can be difficult. It is the intent of the Ho'okina program to recognize the "extra" effort it takes to donate personal time to participate in two (2) citizenship activities throughout the calendar year that provide a business advantage to the Company. No minimum "hours" of volunteer service are required to be eligible. Criteria are measured by the "number" of eligible Company-sponsored activities, or "number" of eligible organizations an employee volunteers with.

Company-sponsored activities also continue to be open to family and friends, to promote citizenship as a unified effort that benefits business, and the community as a whole. In addition, employees may be recognized for their demonstration of "Corporate Citizenship" under the Workforce Excellence Skills (WES) criteria on their annual Performance Development System (PDS) evaluations.

NOTE:
Donations of cash, canned or commercially prepared products for resale, and participation in the coordinating and selling of these products on company time will continue to be excluded for Corporate Citizenship credit.

Industrial Relations will track employee participation for all Company-sponsored events. Employees are welcome to contact Marleen Silva in Industrial Relations for clarification of eligible activities outside the Company. ph. 543-4658 or mesilva@hei.com.

2003 Corporate Citizenship Activity Exception:

All blood donations to the Hawaii Blood Bank will count as a Company-sponsored activity. An employee will not earn more community service credits by donating more than one time. The Blood Bank of Hawaii tracks all blood donations, including those given on personal time outside of Company drives. When making a donation, employees should advise the Blood Bank to credit our Company for the donation.

Non-Company Sponsored Activities – it is the responsibility of the employee to provide a letter, or similar documentation, from the organization validating their role and level of participation to ensure it meets the defined criteria for Ho'okina eligibility. **This documentation MUST be turned in to their Supervisor by the 12/31 deadline of the award calendar year to be credited accordingly. No exceptions will be made for late submissions.**

Examples of "Eligible" Outside Citizenship Activities:

- Serving as an active Volunteer, as required in an established Volunteer Program, or as a Board Member for those tax-exempt 501 (C)(3) non-profit organizations in Hawaii that are community based (not affiliates of public or private schools, churches, etc.). Examples of eligible Volunteer Programs are:
  - Hospice Hawaii
  - Big Brother or Big Sisters of Honolulu
  - Shriner's Hospital for Children
  - Hawaii Literacy
  - Boys & Girls Club of Hawaii
  - American Red Cross
  - American Cancer Society
  - Humane Society
  - Hospital or Skilled Nursing Facility
  - Lanakila Meals-on-Wheels
  - Junior Achievement of Hawaii
  - The Salvation Army Adult Rehabilitation Center
- Serving as an active volunteer on a professional organization's board for a related field of business. Some examples:
  - State Environmental Council
  - Honolulu Community Action Program
  - Toastmasters International
  - American Society of Heating, Refrigeration and Air Conditioning Engineers
- Serving as a volunteer instructor or volunteer speaker at an activity for a related field of business, which is not done on Company time. Some examples:
  - Project Management Training for Non-profit Organizations
  - Career Day Conferences
- Serving on a Community Neighborhood Board

Examples of "Ineligible" Outside Citizenship Activities:
(Participation may also qualify under "Corporate Citizenship" on your Performance Appraisal (PDS), if it meets the WES skill definition)

- Activities done on paid Company time, or which are part of an employee's regular duties, such as:
  - School-to-Work Program, some McGruff Truck Program activities, Community presentations, Company fairs, or conferences, etc.
  - Department Coordinator in the corporate giving campaigns for Aloha United Way, Hawaii Food Bank, Thanksgiving Food Drives, etc.

- Participation in activities that are family-based, such as:
  - Fundraisers, Projects, or Clean-up efforts for: schools, churches, Scouting, carnivals, sport teams, martial arts, hula, dance, or other clubs.
  - Coaching, Umpiring, or Refereeing in schools, community/club leagues
  - Sunday School teacher or Religious Educator
  - Martial Art School, Hawaii Ballroom Dance Association, or other social club Instructor
  - Team parent, or manager, for a child's team or club

- Serving on the board of a tax-exempt 501 (C)(3) non-profit organization that are family-based, such as the Parent Teacher Association, Toddler Program, Parish Council, Residential associations (AOAO), etc.

- Volunteering in community organization's "events" **not** sponsored by the Company. Some examples:
  - Taste of Honolulu booth
  - Senior PGA, Sony Open, or other golf tournaments
  - Cultural Festivals or Fairs
  - Various fundraising events

- Donations of cash, canned, or non-perishable items for collection drives such as the Salvation Army "Adopt a Family," "Toys for Tots," "Lokahi," the "American Red Cross," and other relief organizations.

- Donations of used clothes, shoes, house wares, etc. to the YWCA Clothes Closet, Salvation Army, Big Brothers/Big Sisters, or Goodwill thrift stores.

- Participation as a runner, walker, bowler, etc. in charity events, such as "Walk America," "Bowl for Kids Sake", etc.

Ho'okina Awards
"to persist, do continuously"

PROGRAM THRESHOLD

COMPANY MUST MEET ALL FINANCIAL EARNINGS GOALS BEFORE THESE AWARDS WILL BE GIVEN.

OBJECTIVE

- To reward individual contributions and behavioral measures in the workplace that support our business objectives.
- To promote corporate citizenship serving others (not personal), developing community relationships that help us meet our Organization's long-term objectives.

ELIGIBILITY

- All regular full time or part-time employees employed for 20 or more hours a week.
- You worked at least 1000 productive straight-time hours as a full-time employee (700 for part-time employees) during the calendar year.

  Productive straight-time hours include regular working hours, light duty work, and military leave. It excludes sick leave, workers' compensation, vacation, holidays, family and personal leaves, and long-term disability.

- You were still actively employed in an eligible position as of December 31, 2003.

Employees who meet the criteria above and transferred to another HEI company and remained employed through December 31 of the calendar year will will remain eligible based on their last position. with the former utility company.

HO'OKINA CRITERIA (During the award calendar year)	AWARD MEASURE
1. **Disciplinary or Corrective Actions for infractions during the award calendar year**	1. None
2. **Work-related Industrial Accidents, Illnesses, or Injuries**	2. No lost time and No medical attention
3. **Preventable vehicle incidents**	3. None
4. **Internal & External Customer Complaints**	None
5. **Corporate Citizenship related to Company Business** Voluntary physical participation in any eligible Company-sponsored or eligible citizenship activity, only if it is done outside of normal work hours, and for which an employee is not paid or compensated. **NOTE:** To receive appropriate credit for any eligible activity outside of those sponsored by the Company, each employee must provide written validation from the organization to their supervisor by 12/31 of the award calendar year. No exceptions will be made for late submissions. (See Ho'omaika'i website for more details.)	At least two (2) eligible Corporate Citizenship activities. **NOTE:** They may be a combination of eligible Company-sponsored or eligible Outside Corporate Citizenship activities.

2003 AWARDS

- Based on 2003 performance
- $200 Check *
- **PAID OUT IN 1ST QTR. OF 2004 IF ALL COMPANY FINANCIAL EARNINGS GOALS ARE MET.**

* All awards are less applicable taxes and deductions.

*** HECO has the exclusive authority to determine policies and procedures, and reserves the right to terminate, amend, or modify any of the Ho'omaika'i Awards Programs at any time.**

For additional information please contact Marleen Silva, Industrial Relations Department at Ph. 543-4658 or mesilva@hei.com

Revised 4/2003

HO'OMAIKA'I AWARD PROGRAMS 2003

HECO Employee Recognition Programs

Hawaiian Electric Company
Maui Electric Company
Hawaii Electric Light Company

"When a team of dedicated individuals makes a commitment to act as one...the sky's the limit."

.WARD .EVEL	CRITERIA	NOMINATION & SELECTION DEADLINES	AWARD
'OKELA ARD cel, pion" ıor:	One individual award selected from all nominations received from HECO, HELCO and MECO. 1. Service – distinguished through hallmarks of integrity, compassion, and superiority of service to the community; 2. Values – demonstration of extraordinary and sustained achievement or performance; AND 3. Results - measurable benefits to the Company, its customers, & shareholders in more than one area of the corporate strategic focus	*Nomination Deadline:* 12/31 of each calendar year *Final Selection:* By the CEO. Given annually, but only when a deserving candidate has been identified.	1. $10,000 (less applicable taxes & deductions) 2. CEO Trophy 3. Commendation Letter from the CEO
KA'I RD d, direct" or: tives	1. Outstanding team achievement or contribution, which has a positive impact on a Process Area's Strategic Plan AND 2. Measurable benefits and value in terms of net cost savings or revenue, and service improvement to the Company, its customers, & shareholders in one or more areas of the strategic focus	*Nomination Deadline:* Quarter end of each calendar year (3/31, 6/30, 9/30, & 12/31) *Final Selection:* By Exec. Staff by the 10th of the next month	Quarterly Team Award: Perpetual Trophy and plaque to one team within the following Process Areas: 1. Energy Delivery 2. Customer Service 3. Power Supply 4. Energy Solutions 5. Corporate Services Team Members: 1. Tangible Gift 2. Commendation Letter from the process area V.P.
IALO RD ık, praise" or: ers & isors	1. Exemplary achievement, performance, or community service, *outside (beyond)* the scope of an employee's normal job duties AND 2. Measurable benefits to the Department's or Company's strategic goals	*Nomination Deadline:* 12/31 of each calendar year *Final Selection:* Presentation deadline of 30 business days from approval of the nomination	Non-monetary, tangible gift to an individual, or team of individuals
)LA'A RD don" ıy: ıny	1. Increments of 5 years of continuous service and dedication to HECO; 2. Employee anniversary date between Jan. 1 & Dec. 31 of the award year; & 3. Active employment through an employee's anniversary date.	*Order Deadline:* By 8/14/03 *Delivery by:* 12/31	Jewelry, Koa, watches, golf clubs, or other gift item

MAHALO AWARD FAQ's:

Can an employee be nominated more than once in the same year?

Yes, multiple nominations are eligible if for different achievements within the same year. ***Exception:*** HECO will only honor employees with Mahalo Awards once within a five-year period for their long-term contributions to the same community organization(s).

What kinds of nominations are ineligible for Mahalo Awards?

- ✗ Nominations for work performance or achievements that are within the scope of an employee's normal job duties
- ✗ Recognition for new products or process improvements that are already under active consideration by the Company
- ✗ Recognition for proposals that address employee benefits, salary, discipline or collective bargaining issues, policies or procedures which may be legally required, and conditions of employment.

Who makes the final selection from the nominations received?

Industrial Relations will review, track, and approve all nominations that meet the established criteria for the program.

Who selects the Mahalo Award once a nomination is approved?

Employee's Supervisor /Manager. For Mahalo teams, each Supervisor/Manager either individually, or jointly.

2004 HO'OKINA AWARD CRITERIA DEFINED

For purposes of the Ho'okina Awards Program, the following are the definitions for the established criteria:

(A) Disciplinary Action – any written Verbal Warning discipline for violations of Company policies, Company standard of conduct, behavior, or performance issued to an employee as part of the Company's Progressive Discipline Policy during the award calendar year.

(B) Lost Time Claim – a work-related injury or illness claim that restricts an employee from attendance at work during the award calendar year, and for which an employee is compensated with industrial injury pay.

Medical Attention Claim – a work-related injury or illness claim which does not restrict an employee from attendance at work during the award calendar year, but which requires medical treatment under a workers' compensation claim.

(C) Preventable Vehicle Incident – one involving a company vehicle during the award calendar year, which after investigation, has been determined to be "preventable" under Company policy.

(D) Verified Customer Complaint – all complaints, from either internal or external customers, will be investigated and assessment made by Supervisors and Managers on validity and appropriate action. All complaints during the award calendar year that resulted in disciplinary action of a written Verbal Warning and above, as defined under our Company's Progressive Discipline policy.

(E) Corporate Citizenship Activity – use of personal time for voluntary physical participation in any eligible Company-sponsored or eligible citizenship activity, only if it is done outside of normal work hours, and for which an employee is not paid or compensated. Examples are provided below.

Ho'okina is a corporate program that rewards corporate citizenship in support of our business objectives. It does not reward all the "personal" community service events that our employees participate in. The Company encourages employees to continue to volunteer for such individually meaningful causes.

The Company recognizes that making the time to volunteer can be difficult. It is the intent of the Ho'okina program to recognize the "extra" effort it takes to donate personal time to participate in two (2) citizenship activities throughout the calendar year that provide a business advantage to the Company. No minimum "hours" of volunteer service are required to be eligible. Criteria are measured by the "number" of eligible Company-sponsored activities, or "number" of eligible organizations an employee volunteers with.

Company-sponsored activities also continue to be open to family and friends, to promote citizenship as a unified effort that benefits business, and the community as a whole. In addition, employees may be recognized for their demonstration of "Corporate Citizenship" under the Workforce Excellence Skills (WES) criteria on their annual Performance Development System (PDS) evaluations.

Industrial Relations will track employee participation for all Company-sponsored events. Employees are welcome to contact Marleen Silva in Industrial Relations for clarification of eligible activities outside the Company: ph. 543-4658 or marleen.silva@heco.com.

2004 Corporate Citizenship Activity Exception:

1. All blood donations to the Hawaii Blood Bank will count as a Company-sponsored activity. An employee will not earn more community service credits by donating more than one time. The Blood Bank of Hawaii tracks all blood donations, including those given on personal time outside of Company drives. When making a donation, employees should advise the Blood Bank to credit our Company for the donation.

2. The Ho'okina Award Program will recognize exceptional volunteer support by giving credit for Corporate Citizenship Activity to those who give a substantial donation of personal time (not during regular work hours) to create handmade goods (food or craft items) for resale (and not for personal profit), and ONLY if they are specifically, and entirely, for the HECO & MECO Aloha United Way fundraising activities and HELCO's Hawaii Island Food Bank fundraising activities.

   Fundraising activity coordinators will be responsible for timely submitting to the Ho'omaika'i Award Program Administrator, a description of each participant's role in the fundraising activity. Validation of extent of participation will be reviewed by the Program Administrator for determination of eligibility under the established Corporate Citizenship Activity criteria.

HO'OKINA PROGRAM ADMINISTRATORS:

HECO:	Marleen Silva	ph. 543-4658	marleen.silva@heco.com
HELCO:	Norman Kawabata	ph. 969-0275	nkawabat@HEI.com
MECO:	Barbara Kikuchi	ph. 872-3263	barbara.kikuchi@mauielectric.com

NOTE:
Donations of cash, canned or commercially prepared products for resale, and participation in the coordinating and selling of these products on company time will continue to be excluded for Corporate Citizenship credit.

Non-Company Sponsored Activities – it is the responsibility of the employee to provide a letter, or similar documentation, from the organization validating the extent of their participation to insure it meets the defined criteria for Ho'okina eligibility. **This documentation MUST be turned in to their Supervisor by the 12/31 deadline of the award calendar year to be reviewed and credited accordingly.** Program Administrators will make the determination on Ho'okina eligibility. No exceptions will be made for late submissions.

Examples of "Eligible" Outside Citizenship Activities:

- Serving as an active Volunteer, as required in an established Volunteer Program, or as a Board Member for those tax-exempt 501 (C)(3) non-profit organizations in Hawaii that are community based (not affiliates of public or private schools, churches, etc.). Examples of eligible Volunteer Programs are:
  - Hospice Hawaii
  - Big Brother or Big Sisters of Honolulu
  - Shriner's Hospital for Children
  - Hawaii Literacy
  - Boys & Girls Club of Hawaii
  - American Red Cross
  - American Cancer Society
  - Humane Society
  - Hospital or Skilled Nursing Facility
  - Lanakila Meals-on-Wheels
  - Junior Achievement of Hawaii
  - Ronald McDonald House Charities of Honolulu
- Serving as an active volunteer on a professional organization's board for a related field of business. Some examples:
  - State Environmental Council
  - Honolulu Community Action Program
  - Toastmasters International
  - American Society of Heating, Refrigeration and Air Conditioning Engineers
  - University of Hawaii College of Engineering
  - Hawaii Society of Professional Engineers
  - Hawaii Community Foundation
- Serving as a volunteer instructor or volunteer speaker at an activity for a related field of business, which is not done on Company time. Some examples:
  - Project Management Training for Non-profit Organizations
  - Career Day Conferences
- Serving on a Community Neighborhood Board.

Examples of "Ineligible" Outside Citizenship Activities:
(Participation may qualify under "Corporate Citizenship" on your Performance Appraisal (PDS), if it meets the WES skill definition)

- Activities done on paid Company time, or which are part of an employee's regular duties, such as:
  - School-to-Work Program, some McGruff Truck Program activities, Community presentations, Company fairs, or conferences, etc.
  - Department Coordinator in the corporate giving campaigns for Aloha United Way, Hawaii Food Bank, and Thanksgiving Food Drives
- Participation in activities that are family-based, such as:
  - Fundraisers, Projects, or Clean-up efforts for schools, churches, Scouts

[redacted]

  - Coaching, Umpiring, or Refereeing in schools, community/club leagues
  - Sunday School teacher or Religious Educator
  - Martial Arts School, Hawaii Ballroom Dance Association or other social club Instructor
  - Team parent, or manager, for a child's team or club
- Serving on the board of a tax-exempt 501 (C)(3) non-profit organization that are family-based, such as the Parent Teacher Association, Toddler Program, Parish Council, Residential associations (AOAO), etc.
- Volunteering in a community organization's "event" or fundraiser, which was not

HO'OKINA CRITERIA (During the award calendar year)	AWARD MEASURE
1. **Disciplinary or Corrective Actions for infractions during the award calendar year**	1. None
2. **Work-related Industrial Accidents, Illnesses, or Injuries**	2. No lost time and No medical attention
3. **Preventable vehicle incidents**	3. None
4. **Internal & External Customer Complaints**	None
5. **Volunteer Corporate Citizenship activities related to Company Business** Voluntary physical participation in any eligible Company-sponsored or eligible citizenship activity, only if it is done outside of normal work hours, and for which an employee is not paid or compensated. **NOTE:** To receive appropriate credit for any eligible activity outside of those sponsored by the Company, each employee must provide written validation of the extent of their participation from the organization to their supervisor by 12/31 of the award calendar year. No exceptions will be made for late submissions.	At least two (2) eligible Corporate Citizenship activities. **NOTE:** They may be a combination of eligible Company-sponsored or eligible outside Corporate Citizenship activities.

2004 AWARDS

- Based on 2004 performance
- $200 Check *
- **PAID OUT IN 1ST QTR. OF 2005 IF ALL COMPANY FINANCIAL EARNINGS GOALS ARE MET.**

* All awards are less applicable taxes and deductions.

*** HECO has the exclusive authority to determine policies and procedures, and reserves the right to terminate, amend, or modify any of the Ho'omaika'i Awards Programs at any time.**

For additional information please contact Marleen Silva, Industrial Relations Department at Ph. 543-4658 or marleen.silva@heco.com

Revised 4/2004

HO'OMAIKA'I AWARD PROGRAMS 2004

HECO Employee Recognition Programs

"Excellence is never an accident; it is the result of high intention, sincere effort, intelligent direction, skillful execution and the vision to see obstacles as opportunities."

Golf Green

Hawaiian Electric Company
Maui Electric Company
Hawaii Electric Light Company

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@heco.com before

AWARD LEVEL	CRITERIA	NOMINATION & SELECTION DEADLINES	AWARD
PO'OKELA AWARD "to excel, champion" **Sponsor:** **CEO**	One individual award selected from all nominations received from HECO, HELCO and MECO. 1. Service – distinguished through hallmarks of integrity, compassion, and superiority of service to the community; 2. Values – demonstration of extraordinary and sustained achievement or performance; AND 3. Results - measurable benefits to the Company, its customers, & shareholders in more than one area of the corporate strategic focus	*Nominations Deadline:* 12/31 of each calendar year *Final Selection:* By the CEO. Given annually, but only when a deserving candidate has been identified.	1. $10,000 (less applicable taxes & deductions) 2. CEO Trophy 3. Commendation Letter from the CEO
ALAKA'I AWARD "to lead, direct" **Sponsor:** **Executives**	1. Outstanding team achievement or contribution, which has a positive impact on a Process Area's Strategic Plan; AND 2. Measurable benefits and value in terms of net cost savings or revenue, and service improvement to the Company, its customers, & shareholders in one or more areas of the strategic focus	*Nomination Deadline:* Quarter end of each calendar year (3/31, 6/30, 9/30, & 12/31) *Final Selection:* By Exec. Staff by the 10th of the next month	Quarterly Team Award: Perpetual Trophy and plaque to one team within the following Process Areas: 1. Energy Delivery 2. Customer Service 3. Power Supply 4. Energy Solutions 5. Corporate Services Team Members: 1. Tangible Gift 2. Commendation Letter from the process area V.P.
MAHALO AWARD "to thank, praise" **Sponsor:** **Managers & Supervisors**	1. Exemplary achievement, performance, or volunteer community service, *outside (beyond)* the scope of an employee's normal job duties AND 2. Measurable benefits and value to the Department or Company's strategic goals	*Nomination Deadline:* 12/31 of each calendar year *Final Selection:* Presentation deadline of 30 business days from approval of the nomination	Non-monetary, tangible gift to an individual, or team of individuals
HO'OLA'A AWARD "dedication" **Sponsor:** Company	1. Increments of 5 years of continuous service and dedication to HECO; 2. Employee anniversary date between Jan. 1 & Dec. 31 of the award year; & 3. Active employment through an employee's anniversary date.	*Order Deadline:* By 8/13/04 *Delivery by:* 12/31/04	Jewelry, Koa, watches, golf clubs, or other gift item

MAHALO AWARD FAQ's:

Can an employee be nominated more than once in the same year?

Yes, multiple nominations are eligible if for different achievements within the same year. ***Exception:*** HECO will only honor employees with Mahalo Awards once within a five-year period for their long-term contributions to the same community organization(s).

What kinds of nominations are ineligible for Mahalo Awards?

- ✗ Nominations for work performance or achievements that are within the scope of an employee's normal job duties
- ✗ Recognition for new products or process improvements that are already under active consideration by the Company
- ✗ Recognition for proposals that address employee benefits, salary, discipline or collective bargaining issues, policies or procedures which may be legally required, and conditions of employment.

Who makes the final selection from the nominations received?

Industrial Relations will review, track, and approve all nominations that meet the established criteria for the program.

Who selects the Mahalo Award once a nomination is approved?

Employee's Supervisor /Manager. For Mahalo teams, each Supervisor/Manager either individually, or jointly.

CA-IR-188

Ref: HECO Response to CA-IR-2, HECO T-6, Attachment 4A, Kahe Pond Cleaning Expense Estimate.

Please provide the following information regarding this project included in the test year forecasted expenses:

a. Explain why this project was originally planned for completion by December 2002 (See page 3 of 9), but has apparently been deferred for inclusion in the test year.

b. Provide actual expenditures incurred to-date and planned through project completion, by NARUC Account, for this project.

c. Provide the amount of historical pond cleaning expense at each HECO generating station for the past 10 years and explain why the costs of this particular Kahe project are thought to be representative of normal, ongoing cost levels in light of such history.

HECO Response:

a. The Kahe waste water ponds include ponds 1A, 1B, 2A, and 2B. The ponds are designed and operated in conjunction with the waste water treatment facility to process waste water originating from plant operation and maintenance activities. Treated waste water from the wastewater treatment unit is first pumped to Pond 1A, which serves as a settling pond. After settling the supernatant is subsequently cascaded to the other ponds for further testing and treatment (i.e., pH adjustment) before being overboarded to the facility's cooling water discharge system. Over time, sediment comprised of non-hazardous materials builds up in the ponds, especially in pond 1A. The need to dredge the pond was originally identified in 2002 to increase the useable volume for waste water treatment. The project was delayed due to a number of non-traditional technologies that emerged at the time the need was identified. Three technologies were considered – filter press, Geobags, and centrifuge.

Filter Press

The filter press process requires specialized equipment, not locally available. Transportation cost to ship the equipment from the mainland was estimated at $75,000.00. The advantage of the filter press included total separation of liquid (water) from the solid sludge. The disadvantage besides cost is the time to process large volumes of sludge because the filter press capacity is limited to its chamber size. As discussions continued, two more alternatives were introduced for consideration – geobags and centrifuge.

Geobag

Geobags are large fabric material bags that can be filled with sludge, secured at the ends, and left to dry over time. This is a passive drying system with limitations on the number of geobags that can be filled with sludge. While geobags are the lowest cost at $3,000 per bag, it takes the longest time to process large volumes of sludge due to limitations on available drying areas and the time it takes to dry the sludge sufficiently to meet disposal requirements. Also, additional testing of the drying surface is required due to the inherent leakage of fine sediment in the sludge past the filtration material. Sediment leaking past the filter material has the potential of contaminating the drying areas, thus increasing the amount of disposal material.

Centrifuge

Centrifuge separates solids from liquid by spinning the sludge in a chamber at very high speeds. Solids are collected at the bottom of the chamber and liquids (water) is decanted or removed from the top of the chamber. This is a continuous process whereas the filterpress and geobag technologies are considered batch processes.

The centrifuge process was selected in late 2003, but the equipment had to be designed and constructed for the intended use with an estimated delivery date in late 2004. After

resolving initial technical difficulties dredging commenced on 2/22/05. As of 4/1/05, 519,000 gallons have been processed, and 141.54 tons have been taken to PVT for disposal, with an estimated 850 tons left to dredge. Disposal at PVT reduced disposal costs from the original estimate based on disposal at the Waimanalo Landfill.

b. Actual expenditures incurred as of March 5, 2005 is $142,211 in NARUC Account 511

c. Pond cleaning is one of many maintenance structural expenses in NARUC Account 511 that

Hawaiian Electric Company, Inc.
NARUC Acct. 511 Maint of Structures - Activities
1999-2004 Actual and 2005 Budget

Proj	Proj Desc	1999	2000	2001	2002	2003	2004	Budget 2005
PIN - Honolulu Maintenance		0	0	0	0	0	0	0
263	Maint Common Struct-Prev	36,767	10,021	12,399	11,596	10,257	10,712	25,200
265	Maint Common Struct-Corr	267,326	373,554	222,641	195,926	201,577	152,903	431,002
		304,093	383,575	235,040	207,522	211,834	163,615	456,202
PIL - Kahe Maintenance								
263	Maint Common Struct-Prev	255,003	227,617	120,430	98,589	102,425	60,748	153,067
264	Maint Common Sturct-Pred	0	0	0	0	8,568	0	0
265	Maint Common Struct-Corr	490,561	1,471,939	915,293	575,213	416,968	806,041	856,885
		745,564	1,699,556	1,035,723	673,802	527,961	866,789	1,009,952
PIX - Waiau Maintenance								
248	Perf Water Treat & Analy	0	146	0	0	0	0	0
263	Maint Common Struct-Prev	135,279	202,282	148,538	150,633	157,036	182,900	210,106
264	Maint Common Sturct-Pred	0	0	0	5,537	0	0	0
265	Maint Common Struct-Corr	397,574	1,770,134	792,524	825,518	381,004	1,452,766	1,527,643
266	Maint Common Misc Eq-Prev	0	12,508	57,349	114,441	71,535	47,149	0
		532,853	1,985,070	998,411	1,096,129	609,575	1,682,815	1,737,749
PIP	Planning							
212	Construct Projects	0	0	0	0	0	0	850,000
248	Perf Wtr Treat & Anlys	0	0	0	0	0	72	0
263	Maint Common Struct-Prev	0	0	123	242	0	0	0
264	Maint Common Sturct-Pred	0	0	0	101	0	0	0
265	Maint Common Struct-Corr	7,583	21,325	14,310	8,693	1,987	180	138,010
		7,583	21,325	14,433	9,036	1,987	252	988,010
Total - Maintenance		1,590,093	4,089,526	2,283,607	1,986,489	1,351,357	2,713,471	4,191,913
All Other Support, Admin, Eng		96,098	219,568	221,195	269,333	147,234	364,078	184,928
		1,686,191	4,309,094	2,504,802	2,255,822	1,498,591	3,077,549	4,376,841
							Recon for GL Code Adj per-HECO-WP-101(E)	(353,073)
							As Adjusted	4,023,768

Hawaiian Electric Company, Inc.
Production Maintenance - NARUC Accounts
1999-2004 Actual and 2005 Budget

Acct	Acct Description	1999	2000	2001	2002	2003	2004	Budget 2005
Steam Production								
510	Maint Supv & Eng	15,800	17,305	13,044	8,169	147,054	94,028	45,196
511	Maint Structures	1,686,191	4,309,094	2,504,802	2,255,822	1,498,591	3,077,549	4,023,768
512	Maint Boiler & Fuel Oil Plt	8,776,083	10,411,664	10,630,896	11,834,386	11,947,778	14,561,783	13,853,016
513	Maint Elec Plant	5,147,445	7,340,935	6,755,080	8,327,402	8,970,506	9,066,102	8,240,201
514	Maint Misc Steam Plant	1,985,228	2,099,465	2,108,629	2,389,575	2,229,397	2,219,274	2,750,479
	Steam Production	17,610,747	24,178,463	22,012,451	24,815,354	24,793,326	29,018,736	28,912,660
Other Production								
551	Maint Supv & Eng	0	0	0	0	0	5,534	58,800
552	Maint Structures	102,937	103,399	30,244	4,519	22,367	98,533	0
553	Maint Elec Plant	77,365	95,412	478,407	60,257	63,324	955,900	2,032,125
554	Maint Misc Plant	6,853	0	0	0	0	91,732	0
	Other Production	187,155	198,811	508,651	64,776	85,691	1,151,699	2,090,925
	Total	17,797,902	24,377,274	22,521,102	24,880,130	24,879,017	30,170,435	31,003,585

CA-IR-189

Ref: HECO Boiler Control System Projects (Docket Nos. 01-0072 and 01-0272).

In its Application dated August 8, 2001, HECO asserted that the Kahe Unit 5 Boiler Control System improvements would produce "[d]ecreased maintenance and operational costs" (page 4) and that the work was "similar to work proposed for the Kahe unit 6 Boiler Control System which was the subject of Docket No. 01-0072.

a. Please identify each Boiler Control System project that has been undertaken at Kahe, Honolulu or Waiau stations in 2000 through 2004, other than the projects which were the subject of Docket Nos. 01-0072, 01-0272, 02-0206 and 02-0207.

b. Please explain and quantify how (and specifically where) the related expense savings associated with the upgrades to the boiler control systems identified in response to subpart a. of this information request were recognized in the rate case filing.

HECO Response:

a. There were no Boiler Control System projects undertaken for generating units at the Kahe, Honolulu, or Waiau generating stations during the years 2000 through 2004, other than those projects covered by Docket Nos. 01-0072 (Kahe 6 completed in 2002) and 01-0272 (Kahe 5 completed in 2004).

Please note that the Kahe 3 (Docket No. 02-0206) and Kahe 4 (Docket No. 02-0207) boiler control upgrades have been rescheduled to 2006 to align with their respective

for more technicians to support night shift maintenance coverage (see the response to CA-IR-48) and a higher volume of work generated by other critical systems such as demineralizers, waste water treatment systems, environmental monitoring/reporting, other obsolete and labor intensive systems, and overlapping unit outages. Overtime trends provided in the response to CA-IR-172, that also include the technician trade, serve as an indication that technician requirements remain high at the generating stations.

CA-IR-190

Ref: HECO-1705 Summary of Deferred Income Tax Liability Balances for Rate Base Purposes.

Please provide the following regarding all temporary differences forecasted for the 2005 test year:

a. a listing of all temporary differences, as well as the Schedule M amounts for the 2005 forecast; and

b. a listing of all temporary differences, as well as the actual Schedule M amounts for 2004 (the the 2004 actuals have not been finalized when HECO responds to this information request, provide the estimated amounts and the actual amounts when available).

HECO Response:

a. The requested information is provided on pages 2 to 4 to this response.

b. The requested information is provided on pages 2 to 4 to this response.

HAWAIIAN ELECTRIC CO., INC.
TEMPORARY DIFFERENCES

	Description	ESTIMATE 2004	FINAL TAX ACCRUAL 2004	ESTIMATE 2005
	Utility - Plant:			
1	Book Depreciation on State Tax Basis	76,058,600.00	64,975,814.00	79,664,000.00
2	Tax Depreciation on State Tax Basis	(53,753,774.86)	(45,222,964.36)	(60,012,349.88)
3	Tax Depreciation on RAR Adj	-	-	-
4	Book Deprn on Post-Norm Cap Overheads	450,913.00	450,913.00	450,913.00
5	Tax Depreciation on CIAC - State	(4,517,054.25)	(4,412,620.38)	(4,606,712.91)
6	Tax Depreciation on Tax Capitalized Interest- State	(2,766,752.51)	(2,540,180.87)	(2,991,622.69)
7	Tax Depreciation on Connection Fees	-	-	-
8	Tax Capitalized Interest	5,928,075.20	7,664,027.38	6,377,753.96
9	Net CIAC Received/(Refunded)	952,700.00	684,744.72	2,100,200.00
10	In-Kind CIAC	-	-	-
11	Customer Advances Received/(Refunded)	-	-	-
12	Cost of Removal	(5,917,450.00)	(5,099,304.43)	(5,361,987.00)
13	Gain/(Loss) on Post-`80 Vintage Retirements	-	(1,480,355.43)	-
14	Book Depreciation on Flow-Through Items	512,308.00	512,308.00	512,308.00
15	Book Depreciation on AFUDC	1,606,093.00	1,606,093.00	1,606,093.00
16	Amortization of CWIP Equity Transition	90,195.00	90,195.00	90,195.00
17	Amortization of CWIP Equity Gross-Up	769,715.00	769,715.00	842,989.00
18	Amort of Regulatory Asset - Flow-Through Items	326,301.00	326,301.00	326,301.00
19	Amortization of Regulatory Asset - AFUDC	1,022,958.00	1,022,958.00	1,022,958.00
20	Amortization of Regulatory Liability - Fed ITC	(622,101.00)	(622,101.00)	(581,772.00)
21	Amortization of Federal ITC	(976,729.87)	(976,729.87)	(976,729.87)
22	Reg Asset Amort - Deficit Def on Accel Deprn	110,682.00	110,682.00	110,682.00
23	Reg Liab Amort - Excess Def on Accel Deprn	(904,296.00)	(904,296.00)	(904,295.00)
24	Reg Asset Amort - Deficit Def on Other	(38,700.00)	(38,700.00)	(38,700.00)
25	Reg Liab Amort - Excess Def on Other	(57,600.00)	(57,600.00)	(57,600.00)
26	AFUDC Equity Incurred	(5,219,000.00)	(5,225,585.14)	(5,578,303.00)
27	AFUDC Debt Incurred	(2,325,000.00)	(2,312,581.28)	(2,537,953.00)
28	AFUDC Equity Gross-Up Incurred	(3,324,101.55)	(3,328,295.76)	(3,552,949.93)
29	Book Depreciation on CWIP Equity Transition	141,612.00	141,612.00	141,612.00
30	Book Depreciation on CWIP Debt Transition	63,504.00	63,504.00	63,504.00
31	Book Depreciation on CWIP Equity	1,208,496.00	1,208,496.00	1,323,533.00
32	Book Depreciation on CWIP Debt	595,044.00	595,044.00	595,044.00
33	Computer Software Purchased/(Amort)-State	(239,283.58)	10,152.33	(145,572.12)
34	Depr on e-business hardware - State	(59,307.85)	(75,069.41)	(32,040.87)
35	Depr on DSM/IRP assets - State	-	(17,870.32)	-
	Total Plant Temporary Differences	9,116,044.73	7,918,305.18	7,849,497.69
	Utility - Non Plant:			
1	AES Hawaii PPA		(8,753.00)	
2	Book > (Tax) Bad Debt Expense		(136,046.72)	
3	Barber's Point Reserve	101,719.00	(101,719.00)	58,788.00
4	CIS Project		(95,263.00)	
5	D & T Fee Accrual		(248,491.00)	
6	Directors' Deferred Compensation			

HAWAIIAN ELECTRIC CO., INC.
TEMPORARY DIFFERENCES

	Description	ESTIMATE 2004	FINAL TAX ACCRUAL 2004	ESTIMATE 2005
7	Directors - NonEmp NQ	11,000.00	11,427.00	11,000.00
8	EEO Claims Liability	80,554.82	161,079.35	147,500.00
9	EICP Expense Current			
10	EICP Expense Deferred		(72,535.00)	
11	EICP Interest	23,448.80	23,448.00	12,513.00
12	Energy Services - DSM Costs (Incurred)/Expensed		(254,165.95)	
13	Electric Vehicle Credit			
14	Emissions Fee	(15,138.01)	111,373.95	-
15	FMB Issue Exp Amort - Series U	129,769.64	129,769.64	-
16	FMB Issue Exp Amort - Series V	61,968.00	61,968.00	36,148.00
17	FMB Issue Exp Amort - Series X	66,633.00	66,633.00	66,633.00
18	G/L CY Sales (Queen Emma)			1,398,042.00
19	G/L CY Sales (Kuliouou)	198,243.29	198,243.29	
20	G/L CY Sales (Iolani)		171,932.90	
21	G/L Iolani Amortization	(57,669.77)	(59,701.59)	(32,260.68)
22	G/L Substation Land - Makiki Amortization	(76,550.25)	(76,550.25)	-
23	G/L Substation Land - Wilder Amortization	(13,208.08)	(13,208.08)	-
24	G/L Substation Land - Lilipuna Amortization	(20,769.60)	(20,769.60)	(5,192.40)
25	G/L Substation Land - Kuliouou Amortization	(16,520.27)	(16,520.27)	(39,648.66)
26	G/L Substation Land - Queen Emma Amortization			(256,308.00)
27	Honolulu Harbor Cleanup Reserve			
28	Interest on IRS Adjustments		147,285.00	
29	Lease Rent Premium Amortization	(4,800.14)	(4,800.86)	(3,728.76)
30	Legal Fees on General Liability & Auto		60,500.00	
31	LTIP Expense Current	342,059.00	58,653.00	
32	LTIP Expense Deferred		(60,519.00)	
33	Outage Loss Adjustment			
34	Pension - HEIR	-	(7,046,921.00)	
35	Pension - Excess	135,000.00	113,017.00	
36	Pension - SERP	279,000.00	349,868.00	
37	Pension - OPEB Electric Discount	(280,195.00)	(325,000.00)	
38	Pension - OPEB Other	-	1,940,269.00	
39	Prepaid Expenses		(123,752.22)	
40	Reserve - General Liab & Auto		939,000.00	
41	Reserve - Knapp lawsuit	316.00	(7,049.93)	316.00
42	Restricted Stock - Deferred Comp	35,892.00	35,892.00	33,963.00
43	Rev Bond Cost Amortization	362,746.12	362,746.12	362,747.13
44	Rev Bond Cost Amortization - CY redemption	-	-	-
45	Rev Bond Interest Differential / Amortization	(285,690.42)	(303,044.16)	132,776.84
46	Software (e business only)	50,418.00	50,418.00	69,811.00
47	Software (Ellipse)	(34,028.00)	(34,028.00)	(34,028.00)
48	Sun Power for Schools	-		
49	TIP Accrual Adjustment	-	245,900.00	
50	Vacation Accrual	6,716.00	6,716.00	
51	Waiau Water Well Amortization	(64,577.88)	(64,577.88)	(64,577.88)
52	Worker's Compensation Accrued/(Paid)		(65,334.00)	
53	Other			
	Total Non Plant Temporary Differences	1,016,336.25	(3,892,611.26)	1,894,493.59

HAWAIIAN ELECTRIC CO., INC.
TEMPORARY DIFFERENCES

Description	ESTIMATE 2004	FINAL TAX ACCRUAL 2004	ESTIMATE 2005
Total State Temporary Differences - Utility	10,132,380.98	4,025,693.92	9,743,991.28
State Capital Goods Excise Tax Credit			
Originating Credit	(3,312,158.00)	(3,195,500.00)	(3,053,100.00)
Amort of State Capital Goods Excise Tax Credit	996,453.00	992,564.00	1,102,970.00
State-to-Federal Adjustments:			
Temporary Differences:			
Addback State Tax Depreciation	53,753,774.86	45,222,964.36	60,012,349.88
Federal Tax Depreciation	(73,949,312.74)	(73,565,915.80)	(64,594,054.61)
Addback State Tax Depreciation on CIAC	4,517,054.25	4,412,620.38	4,606,712.91
Federal Tax Depreciation on CIAC	(4,726,872.65)	(4,806,547.80)	(4,776,537.37)
Addback State Tax Depreciation on TCI	2,766,752.51	2,540,180.87	2,991,622.69
Federal Tax Depreciation on TCI	(3,480,831.13)	(3,651,251.23)	(3,153,627.01)
Addback State Software	239,283.58	(10,152.33)	145,572.12
Federal Software	(141,963.88)	(5,211.42)	(110,397.58)
Addback depr on e-business hardware - State	59,307.85	75,069.41	32,040.87
Federal depr on e-business hardware	(53,499.02)	(59,894.81)	(28,555.56)
Addback depr on DSM/IRP assets - State		17,870.32	
Federal depr on DSM/IRP assets		(13,929.63)	
Total Federal Temporary Differences - Utility	(21,016,306.37)	(29,844,197.68)	(4,874,873.66)
Nonutility Temporary Differences			
Book Depreciation	95,082.86	95,082.86	147,362.00
Tax Depreciation	(12,077.50)	(12,077.50)	(11,942.55)
Total Temporary Differences - Nonutility	83,005.36	83,005.36	135,419.45

CA-IR-191

Ref: HECO-WP-1701, page 3.

Please provide the following:

a. A copy of the actual Form 941 for 2003 reflecting the actual "Gross Pay" and "FICA" taxes for each quarter of 2003 shown on HECO-WP-1701, well as all a copy of the actual Form 941 filed for 2004.

b. A copy of the 2005 employees budgeted by month that would be comparable to the projected year end amount of 1,491.

c. The actual number of employees for the first pay date in 2005 (i.e., as of January 12, 2005).

HECO Response:

a. The requested information is attached for each quarter of 2003 and 2004. See pages 2 to 9 of this response.

b. The requested information is attached as page 10 of this response.

c. The actual number of employees as of January 12, 2005 is 1,413.

Form **941**
(Rev. January 2002)
Department of the Treasury
Internal Revenue Service (99)

Employer's Quarterly Federal Tax Return

▶ See separate instructions revised January 2002 for information on completing this return.

Please type or print.

OMB No. 1545-0029

Enter state code for state in which deposits were made only if different from state in address to the right ▶ (see page 2 of instructions).

Name (as distinguished from trade name)
HAWAIIAN ELECTRIC CO., INC.

Trade name, if any
HECO

Address (number and street)
P.O. BOX 2750

Date quarter ended
03/31/2003

Employer identification number
99-0040500

City, state, and ZIP code
HONOLULU, HI 96840

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If address is different from prior return, check here ▶

IRS Use

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If you do not have to file returns in the future, check here ▶ ☐ and enter date final wages paid ▶

If you are a seasonal employer, see Seasonal employers on page 1 of the instructions and check here ▶ ☐

Form **941** (Rev. January 2002)
Department of the Treasury
Internal Revenue Service (99)

Employer's Quarterly Federal Tax Return

▶ See separate instructions revised January 2002 for information on completing this return.

Please type or print.

OMB No. 1545-0029

Enter state code for state in which deposits were made only if different from state in address to the right ▶ [ ] (see page 2 of instructions).

Name (as distinguished from trade name): HAWAIIAN ELECTRIC CO., INC.

Trade name, if any: HECO

Address (number and street): P.O. BOX 2750

City, state, and ZIP code: HONOLULU, HI 96840

Date quarter ended: 06/30/2003

Employer identification number: 99-0040500

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If address is different from prior return, check here ▶ [ ]

IRS Use

If you do not have to file returns in the future, check here ▶ [ ] and enter date final wages paid ▶

If you are a seasonal employer, see **Seasonal employers** on page 1 of the instructions and check here ▶ [ ]

1	Number of employees in the pay period that includes March 12th ▶	1			
2	Total wages and tips, plus other compensation			2	19187023.30
3	Total income tax withheld from wages, tips, and sick pay			3	2692435.46
4	Adjustment of withheld income tax for preceding quarters of calendar year			4	0.00
5	Adjusted total of income tax withheld (line 3 as adjusted by line 4—see instructions)			5	2692435.46
6	Taxable social security wages	6a	20542769.69	× 12.4% (.124) = 6b	2547303.44
	Taxable social security tips	6c	0.00	× 12.4% (.124) = 6d	0.00
7	Taxable Medicare wages and tips	7a	21180568.27	× 2.9% (.029) = 7b	614236.48

10/31/03 mail 9th

Form **941**
(Rev. January 2003)
Department of the Treasury
Internal Revenue Service (99)

Employer's Quarterly Federal Tax Return

▶ See separate instructions revised January 2003 for information on completing this return.

Please type or print.

OMB No. 1545-0029

Enter state code for state in which deposits were made **only** if different from state in address to the right ▶ [ ] (see page 2 of separate instructions).

Name (as distinguished from trade name)
HAWAIIAN ELECTRIC CO., INC.

Trade name, if any
HECO

Address (number and street)
P.O. BOX 2750

Date quarter ended
09/30/2003

Employer identification number
99-0040500

City, state, and ZIP code
HONOLULU, HI 96840

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A If you **do not have to file** returns in the future, check here ▶ [ ] and enter date final wages paid ▶

B If you are a seasonal employer, see **Seasonal employers** on page 1 of the instructions and check here ▶ [ ]

Form **941**
(Rev. January 2003)
Department of the Treasury
Internal Revenue Service (99)

Employer's Quarterly Federal Tax Return

▶ See separate instructions revised January 2003 for information on completing this return.

Please type or print.

OMB No. 1545-0029

Enter state code for state in which deposits were made **only** if different from state in address to the right ▶ [ ] (see page 2 of separate instructions).

Name (as distinguished from trade name): HAWAIIAN ELECTRIC CO., INC.
Trade name, if any: HECO
Address (number and street): P.O. BOX 2750
City, state, and ZIP code: HONOLULU, HI 96840
Date quarter ended: 12/31/2003
Employer identification number: 99-0040500

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If address is different from prior return, check here ▶ [ ]

IRS Use

A If you **do not have to file** returns in the future, check here ▶ [ ] and enter date final wages paid ▶

B If you are a seasonal employer, see **Seasonal employers** on page 1 of the instructions and check here ▶ [ ]

1	Number of employees in the pay period that includes March 12th ▶	1					
2	Total wages and tips, plus other compensation					2	23904403 46
3	Total income tax withheld from wages, tips, and sick pay					3	3325524 40
4	Adjustment of withheld income tax for preceding quarters of **this calendar year**					4	0 00
5	Adjusted total of income tax withheld (line 3 as adjusted by line 4)					5	3325524 40
6	Taxable social security wages	6a	21619150	05	× 12.4% (.124) =	6b	2680774 61
	Taxable social security tips	6c	0	00	× 12.4% (.124) =	6d	0 00
7	Taxable Medicare wages and tips	7a	25488079	77	× 2.9% (.029) =	7b	739154 31
8	Total social security and Medicare taxes (add lines 6b, 6d, and 7b). **Check here if wages are not subject to social security and/or Medicare tax** ▶ [ ]					8	3419928 92
9	Adjustment of social security and Medicare taxes (see instructions for required explanation) Sick Pay $ 0.00 ± Fractions of Cents $ -0.06 ± Other $ 0.00 =					9	-0 06
10	Adjusted total of social security and Medicare taxes (line 8 as adjusted by line 9)					10	3419928 86
11	**Total taxes** (add lines 5 and 10)					11	6745453 26
12	Advance earned income credit (EIC) payments made to employees (see instructions)					12	0 00
13	Net taxes (subtract line 12 from line 11). **If $2,500 or more, this must equal line 17, column (d) below (or line D of Schedule B (Form 941))**					13	6745453 26
14	Total deposits for quarter, including overpayment applied from a prior quarter					14	6745459 70
15	**Balance due** (subtract line 14 from line 13). See instructions					15	
16	**Overpayment.** If line 14 is more than line 13, enter excess here ▶ $ 6.44						

Form **941**
(Rev. January 2003)
Department of the Treasury
Internal Revenue Service (99)

Employer's Quarterly Federal Tax Return

▶ See separate instructions revised January 2003 for information on completing this return.

Please type or print.

OMB No. 1545-0029

Enter state code for state in which deposits were made **only if** different from state in address to the right ▶ (see page 2 of separate instructions).

Name (as distinguished from trade name): HAWAIIAN ELECTRIC CO., INC.
Trade name, if any: HECO
Address (number and street): P.O. BOX 2750
Date quarter ended: 03/31/2004
Employer identification number: 99-0040500
City, state, and ZIP code: HONOLULU, HI 96840

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If address is different from prior return, check here ▶ ☐

IRS Use

A If you **do not have to file** returns in the future, check here ▶ ☐ and enter date final wages paid ▶
B If you are a seasonal employer, see **Seasonal employers** on page 1 of the instructions and check here ▶ ☐

1	Number of employees in the pay period that includes March 12th ▶	1	1390		
2	Total wages and tips, plus other compensation			2	22472699.20
3	Total income tax withheld from wages, tips, and sick pay			3	3327316.50
4	Adjustment of withheld income tax for preceding quarters of **this calendar year**			4	0.00
5	Adjusted total of income tax withheld (line 3 as adjusted by line 4)			5	3327316.50
6	Taxable social security wages	6a	23684729.33 × 12.4% (.124) =	6b	2936906.44
	Taxable social security tips	6c	0.00 × 12.4% (.124) =	6d	0.00
7	Taxable Medicare wages and tips	7a	24659019.74 × 2.9% (.029) =	7b	715111.57
8	Total social security and Medicare taxes (add lines 6b, 6d, and 7b). **Check here if wages are not subject to social security and/or Medicare tax** ▶ ☐			8	3652018.01
9	Adjustment of social security and Medicare taxes (see instructions for required explanation) Sick Pay $ 0.00 ± Fractions of Cents $ -0.19 ± Other $ 0.00 =			9	-0.19
10	Adjusted total of social security and Medicare taxes (line 8 as adjusted by line 9)			10	3652017.82
11	**Total taxes** (add lines 5 and 10)			11	6979334.32
12	Advance earned income credit (EIC) payments made to employees (see instructions)			12	0.00
13	Net taxes (subtract line 12 from line 11). **If $2,500 or more, this must equal line 17, column (d) below (or line D of Schedule B (Form 941))**			13	6979334.32
14	Total deposits for quarter, including overpayment applied from a prior quarter			14	6979334.50
15	**Balance due** (subtract line 14 from line 13). See instructions			15	
16	**Overpayment.** If line 14 is more than line 13, enter excess here ▶ $ 0.18 and check if to be: ☐ Applied to next return **or** ☒ Refunded.				

- **All filers:** If line 13 is less than $2,500, **do not** complete line 17 **or** Schedule B (Form 941).
- **Semiweekly schedule depositors:** Complete Schedule B (Form 941) and check here ▶ ☒
- **Monthly schedule depositors:** Complete line 17, columns (a) through (d), and check here ▶ ☐

17 **Monthly Summary of Federal Tax Liability.** (Complete **Schedule B (Form 941)** instead, if you were a semiweekly schedule depositor.)

(a) First month liability	(b) Second month liability	(c) Third month liability	(d) Total liability for quarter

Third Party Designee

Do you want to allow another person to discuss this return with the IRS (see separate instructions)? ☐ Yes. Complete the following. ☐ No

Designee's name ▶ Phone no. ▶ ( ) Personal identification number (PIN) ▶

Sign Here

Under penalties of perjury, I declare that I have examined this return, including accompanying schedules and statements, and to the best of my knowledge and belief, it is true, correct, and complete.

Signature ▶ Print Your Name and Title ▶ Ernest T. Shiraki Controller Date ▶ 4/8/04

Form **941** (Rev. January 2003)
Department of the Treasury
Internal Revenue Service (99)

Employer's Quarterly Federal Tax Return

▶ See separate instructions revised January 2003 for information on completing this return.

Please type or print.

OMB No. 1545-0029

Enter state code for state in which deposits were made **only** if different from state in address to the right ▶ (see page 2 of separate instructions).

Name (as distinguished from trade name): HAWAIIAN ELECTRIC CO., INC.
Trade name, if any: HECO
Address (number and street): P.O. BOX 2750
City, state, and ZIP code: HONOLULU, HI 96840
Date quarter ended: 06/30/2004
Employer identification number: 99-0040500

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If address is different from prior return, check here ▶ ☐

IRS Use

A If you **do not have to file** returns in the future, check here ▶ ☐ and enter date final wages paid ▶
B If you are a seasonal employer, see **Seasonal employers** on page 1 of the instructions and check here ▶ ☐

1	Number of employees in the pay period that includes March 12th ▶	1		
2	Total wages and tips, plus other compensation		2	23616728.96
3	Total income tax withheld from wages, tips, and sick pay		3	3219391.35
4	Adjustment of withheld income tax for preceding quarters of **this calendar year**		4	0.00
5	Adjusted total of income tax withheld (line 3 as adjusted by line 4)		5	3219391.35
6	Taxable social security wages 6a: 25016770.52 × 12.4% (.124) =		6b	3102079.54
	Taxable social security tips 6c: 0.00 × 12.4% (.124) =		6d	0.00
7	Taxable Medicare wages and tips 7a: 26267943.11 × 2.9% (.029) =		7b	761770.35
8	Total social security and Medicare taxes (add lines 6b, 6d, and 7b). **Check here if wages are not subject to social security and/or Medicare tax** ▶ ☐		8	3863849.89
9	Adjustment of social security and Medicare taxes (see instructions for required explanation) Sick Pay $ 0.00 ± Fractions of Cents $ 0.35 ± Other $ 0.00 =		9	0.35
10	Adjusted total of social security and Medicare taxes (line 8 as adjusted by line 9)		10	3863850.24
11	**Total taxes** (add lines 5 and 10)		11	7083241.59
12	Advance earned income credit (EIC) payments made to employees (see instructions)		12	0.00
13	Net taxes (subtract line 12 from line 11). **If $2,500 or more, this must equal line 17, column (d) below (or line D of Schedule B (Form 941))**		13	7083241.59
14	Total deposits for quarter, including overpayment applied from a prior quarter		14	7083241.59
15	**Balance due** (subtract line 14 from line 13). See instructions		15	0.00
16	**Overpayment.** If line 14 is more than line 13, enter excess here ▶ $ _____ and check if to be: ☐ Applied to next return **or** ☐ Refunded.			

- **All filers:** If line 13 is less than $2,500, **do not** complete line 17 **or** Schedule B (Form 941).
- **Semiweekly schedule depositors:** Complete Schedule B (Form 941) and check here ▶ ☒
- **Monthly schedule depositors:** Complete line 17, columns (a) through (d), and check here ▶ ☐

17 Monthly Summary of Federal Tax Liability. (Complete **Schedule B (Form 941)** instead, if you were a semiweekly schedule depositor.)

(a) First month liability	(b) Second month liability	(c) Third month liability	(d) Total liability for quarter

Third Party Designee

Do you want to allow another person to discuss this return with the IRS (see separate instructions)? ☐ Yes. Complete the following. ☐ No

Designee's name ▶ Phone no. ▶ ( ) Personal identification number (PIN) ▶

Sign Here

Under penalties of perjury, I declare that I have examined this return, including accompanying schedules and statements, and to the best of my knowledge and belief, it is true, correct, and complete.

Signature ▶ Print Your Name and Title ▶ Ernest T. Shiraki Controller Date ▶ 7/26/04

For Privacy Act and Paperwork Reduction Act Notice, see back of Payment Voucher. Cat. No. 17001Z Form **941** (Rev. 1-2003)

Form **941** (Rev. January 2004)
Department of the Treasury
Internal Revenue Service (99)

Employer's Quarterly Federal Tax Return

▶ See separate instructions revised January 2004 for information on completing this return.

Please type or print.

OMB No. 1545-0029

Enter state code for state in which deposits were made **only** if different from state in address to the right ▶ [ ] (see page 2 of separate instructions).

Name (as distinguished from trade name): HAWAIIAN ELECTRIC CO., INC.
Trade name, if any: HECO
Address (number and street): P.O. BOX 2750
City, state, and ZIP code: HONOLULU, HI 96840
Date quarter ended: 09/30/2004
Employer identification number: 99-0040500

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If address is different from prior return, check here ▶ [ ]

IRS Use

A If you **do not have to file** returns in the future, check here ▶ [ ] and enter date final wages paid ▶
B If you are a seasonal employer, see **Seasonal employers** on page 1 of the instructions and check here ▶ [ ]

1	Number of employees in the pay period that includes March 12th ▶	1			
2	Total wages and tips, plus other compensation			2	21007894.31
3	Total income tax withheld from wages, tips, and sick pay			3	2918865.66
4	Adjustment of withheld income tax for preceding quarters of **this calendar year**			4	0.00
5	Adjusted total of income tax withheld (line 3 as adjusted by line 4)			5	2918865.66
6	Taxable social security wages	6a 21616713.85	× 12.4% (.124) =	6b	2680472.52
	Taxable social security tips	6c 0.00	× 12.4% (.124) =	6d	0.00
7	Taxable Medicare wages and tips	7a 23160552.43	× 2.9% (.029) =	7b	671656.02
8	Total social security and Medicare taxes (add lines 6b, 6d, and 7b). **Check here if wages are not subject to social security and/or Medicare tax** ▶ [ ]			8	3352128.54
9	Adjustment of social security and Medicare taxes (see instructions for required explanation) Sick Pay $ 0.00 ± Fractions of Cents $ 0.36 ± Other $ 0.00 =			9	0.36
10	Adjusted total of social security and Medicare taxes (line 8 as adjusted by line 9)			10	3352128.90
11	**Total taxes** (add lines 5 and 10)			11	6270994.56
12	Advance earned income credit (EIC) payments made to employees (see instructions)			12	0.00
13	Net taxes (subtract line 12 from line 11). **If $2,500 or more, this must equal line 17, column (d) below (or line D of Schedule B (Form 941))**			13	6270994.56
14	Total deposits for quarter, including overpayment applied from a prior quarter			14	6270994.56
15	**Balance due** (subtract line 14 from line 13). See instructions			15	0.00
16	**Overpayment.** If line 14 is more than line 13, enter excess here ▶ $ _____ and check if to be: [ ] Applied to next return **or** [ ] Refunded.				

- **All filers:** If line 13 is less than $2,500, **do not** complete line 17 **or** Schedule B (Form 941).
- **Semiweekly schedule depositors:** Complete Schedule B (Form 941) and check here ▶ [X]
- **Monthly schedule depositors:** Complete line 17, columns (a) through (d), and check here. ▶ [ ]

17 Monthly Summary of Federal Tax Liability. (Complete **Schedule B (Form 941)** instead, if you were a semiweekly schedule depositor.)

(a) First month liability	(b) Second month liability	(c) Third month liability	(d) Total liability for quarter

Third Party Designee

Do you want to allow another person to discuss this return with the IRS (see separate instructions)? [ ] **Yes.** Complete the following. [ ] No

Designee's name ▶ | Phone no. ▶ ( ) | Personal identification number (PIN) ▶

Sign Here

Under penalties of perjury, I declare that I have examined this return, including accompanying schedules and statements, and to the best of my knowledge and belief, it is true, correct, and complete.

Signature ▶ [signature] Print Your Name and Title ▶ ERNEST SHIRAKI CONTROLLER Date ▶ 10/18/2004

Mailed 10/27/04 Cert/Rec'd Rec'd

Form **941**
(Rev. January 2004)
Department of the Treasury
Internal Revenue Service (99)

Employer's Quarterly Federal Tax Return

▶ See separate instructions revised January 2004 for information on completing this return.

Please type or print.

OMB No. 1545-0029

Enter state code for state in which deposits were made **only** if different from state in address to the right ▶ [ ] (see page 2 of separate instructions).

Name (as distinguished from trade name): HAWAIIAN ELECTRIC CO., INC.
Trade name, if any: HECO
Address (number and street): P.O. BOX 2750
Date quarter ended: 12/31/2004
Employer identification number: 99-0040500
City, state, and ZIP code: HONOLULU, HI 96840

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If address is different from prior return, check here ▶ [ ]

IRS Use

A If you **do not have to file** returns in the future, check here ▶ [ ] and enter date final wages paid ▶
B If you are a seasonal employer, see **Seasonal employers** on page 1 of the instructions and check here ▶ [ ]

1	Number of employees in the pay period that includes March 12th ▶	1			
2	Total wages and tips, plus other compensation			2	27115381.28
3	Total income tax withheld from wages, tips, and sick pay			3	4035966.07
4	Adjustment of withheld income tax for preceding quarters of **this calendar year**			4	0.00
5	Adjusted total of income tax withheld (line 3 as adjusted by line 4)			5	4035966.07
6	Taxable social security wages	6a	23040087.48 × 12.4% (.124) =	6b	2856970.85
	Taxable social security tips	6c	0.00 × 12.4% (.124) =	6d	0.00
7	Taxable Medicare wages and tips	7a	29119131.23 × 2.9% (.029) =	7b	844454.81
8	Total social security and Medicare taxes (add lines 6b, 6d, and 7b). **Check here if wages are not subject to social security and/or Medicare tax** ▶ [ ]			8	3701425.66
9	Adjustment of social security and Medicare taxes (see instructions for required explanation) Sick Pay $ 0.00 ± Fractions of Cents $ -1.08 ± Other $ 0.00 =			9	-1.08
10	Adjusted total of social security and Medicare taxes (line 8 as adjusted by line 9)			10	3701424.58
11	**Total taxes** (add lines 5 and 10)			11	7737390.65
12	Advance earned income credit (EIC) payments made to employees (see instructions)			12	0.00
13	Net taxes (subtract line 12 from line 11). **If $2,500 or more, this must equal line 17, column (d) below (or line D of Schedule B (Form 941))**			13	7737390.65
14	Total deposits for quarter, including overpayment applied from a prior quarter			14	7737395.46
15	**Balance due** (subtract line 14 from line 13). See instructions			15	
16	**Overpayment.** If line 14 is more than line 13, enter excess here ▶ $ 4.81 and check if to be: [ ] Applied to next return or [X] Refunded.				

- **All filers:** If line 13 is less than $2,500, **do not** complete line 17 or Schedule B (Form 941).
- **Semiweekly schedule depositors:** Complete Schedule B (Form 941) and check here ▶ [X]
- **Monthly schedule depositors:** Complete line 17, columns (a) through (d), and check here ▶ [ ]

17 **Monthly Summary of Federal Tax Liability.** (Complete Schedule B (Form 941) instead, if you were a semiweekly schedule depositor.)

(a) First month liability	(b) Second month liability	(c) Third month liability	(d) Total liability for quarter

Third Party Designee

Do you want to allow another person to discuss this return with the IRS (see separate instructions)? [ ] Yes. Complete the following. [ ] No

Designee's name ▶ Phone no. ▶ ( ) Personal identification number (PIN) ▶

Sign Here

Under penalties of perjury, I declare that I have examined this return, including accompanying schedules and statements, and to the best of my knowledge and belief, it is true, correct, and complete.

Signature ▶ Print Your Name and Title ▶ ERNEST SHIRAKI CONTROLLER Date ▶ 01/24/2005

Employee Count - By Month

_EE	Jan 05	Feb 05	Mar 05	Apr 05	May 05	Jun 05	Jul 05	Aug 05	Sep 05	Oct 05	Nov 05	Dec 05
*Supply	1,531	1,491	1,493	1,493	1,492	1,493	1,493	1,493	1,493	1,492	1,492	1,492

CA-IR-192

Ref: HECO-WP-1702.

Please provide the support for each number reflected therein, including without limitation:

a. the interest expense on Long Term Debt;
b. the interest Expense on Short Term Debt;
c. the interest Expense on Hybrid Securities;
d. the average Short-Term Debt in the amount of $39,929,000; and
e. the ratio of Debt to Total.

HECO Response:

a. Interest expense on Long Term Debt of $25,313,000 is calculated at HECO-2103.

b. Average Short-Term Debt of $39,929,000 (see HECO-2102) multiplied by 3.5% (see HECO-2101) equals $1,398,000.

c. Interest expense on Hybrid Securities of $2,051,000 is calculated at HECO-2104.

d. The average short-term debt of $39,929,000 is calculated at HECO-2102.

e. The requested information is attached as page 2 to this response.

	2005
Weighted After-Tax Cost	
Common Equity	5.88%
Preferred Stock	0.09%
Hybrid Preferred Stock	0.39%
1st Mtge Bonds	0.00%
Revenue Bonds	0.18%
-1988 issue	0.15%
-1990-A issue	0.08%
-1990-B issue	0.10%
-1990-C '88	0.02%
-1990-C '90	0.10%
-1992 Series	0.00%
-1993 Series	0.23%
-1995-A	0.22%
-1996-A	0.25%
-1996-B	0.07%
-1997-A	0.24%
-1999-A	0.18%
- 2002 Series	0.15%
- 2003 Series (Refi 1992)	0.17%
S/T Borrowings	0.18%
Total After-Tax Cost	8.6952%
Unadjusted Monthly Cost	0.7246%
Adjusted Monthly Rate	0.7194%
Split: Equity	68.7283%
Debt	31.2717%

CA-IR-193

Ref: HECO-1706 "Excess" Deferred Income Tax Balances.

Please provide a schedule of the amortization of excess deferred taxes that are turning around pursuant to the "average rate assumption" method for 2003 actual, 2004 actual, and forecasted for 2005 and 2006.

HECO Response:

HAWAIIAN ELECTRIC COMPANY, INC.
2002-2006 FORECAST
AMORTIZATION OF SFAS 109 ITEMS

w/p ref.		2002	2003	2004	2005	2006
	CWIP Equity Transition					
A1	Activity #19671	78,200	78,200	78,200	78,200	78,200
	Flow Through					
B1	Activity #19672	326,301	326,301	326,301	326,301	326,301
	Plant Transition					
C1	Activity #19673	1,022,958	1,022,958	1,022,958	1,022,958	1,022,958
	CWIP Equity Ongoing					
A1	Activity #19674	598,100	657,300	713,100	757,500	790,000
	Reg Liability-Excess Def'd ITC					
D1	Activity #19675	(676,079)	(649,628)	(622,101)	(581,772)	(539,419)
	Reg Liability-Excess Def'd 283					
E1	Activity #19680	(57,600)	(57,600)	(57,600)	(57,600)	(57,600)
	Reg Liability-Deficit Def'd 283					
F1	Activity #19681	(38,700)	(38,700)	(38,700)	(38,700)	(38,700)
	Reg Liability-Excess Def'd 282					
G1	Activity #19682	(904,300)	(904,300)	(904,300)	(904,300)	(904,300)
	Reg Asset-Deficit Def'd 282					
H1	Activity #19683	110,682	110,682	110,682	110,682	110,683
	Total Estimated Amortization	459,562	545,213	628,540	713,269	788,123
	totals from prior 5 year forecast	443,472	539,623	616,750	718,579	
	Increase of current forecast over prior	16,090	5,590	11,790	(5,310)	

CA-IR-194

Ref: HECO-1706 "Excess" Deferred Income Tax Balances.

Please provide a schedule of the amortization of excess deferred taxes that are related to basis differences capitalized for 2003 actual, 2004 actual and forecasted for 2005 and 2006.

HECO Response:

See attached pages 2 and 3 to this response.

HAWAIIAN ELECTRIC COMPANY, INC.
EXCESS DEFERRED TAX AMORTIZATION -
OTHER THAN ACCELERATED DEPRECIATION

	Capitalized to Construction	CIAC	Capitalized Interest	TOTAL BASE	TOTAL AMORTIZATION TAX & REG. LIAB.
2003 EXCESS DEFERRED TAXES					
Vintage 1987 - base of amortization	0	(194,068)	(28,378)	(222,446)	
Excess Deferred Tax Rate Differential				0.04699248	
					(10,453)
Pre-1987 vintages - base of amortization	450,913	0	0	450,913	
				0.10324129	
					46,553
TOTAL EXCESS DEFERRED TAX AMORTIZATION FOR 2003					36,100
GROSS-UP FACTOR (1 / (1 - .3890977444))					1.636923
RELATED REGULATORY LIABILITY					59,092
Miscellaneous Difference					(1,492)
TOTAL REGULATORY LIABILITY AMORTIZATION FOR 2003 (per general ledger)					**57,600**
2004 EXCESS DEFERRED TAXES					
Vintage 1987 - base of amortization	0	(194,025)	(28,372)	(222,397)	
Excess Deferred Tax Rate Differential				0.04699248	
					(10,451)
Pre-1987 vintages - base of amortization	450,913	0	0	450,913	
				0.10324129	
					46,553
TOTAL EXCESS DEFERRED TAX AMORTIZATION FOR 2004					36,102
GROSS-UP FACTOR (1 / (1 - .3890977444))					1.636923
RELATED REGULATORY LIABILITY					59,096
Miscellaneous Difference					(1,496)
TOTAL REGULATORY LIABILITY AMORTIZATION FOR 2004 (per general ledger)					**57,600**
2005 EXCESS DEFERRED TAXES					
Vintage 1987 - base of amortization	0	(194,068)	(28,378)	(222,446)	
Excess Deferred Tax Rate Differential				0.04699248	
					(10,453)
Pre-1987 vintages - base of amortization	450,913	0	0	450,913	
				0.10324129	
					46,553
TOTAL EXCESS DEFERRED TAX AMORTIZATION FOR 2005					36,100
GROSS-UP FACTOR (1 / (1 - .3890977444))					1.636923
RELATED REGULATORY LIABILITY					59,092
Miscellaneous Difference					(1,492)
TOTAL REGULATORY LIABILITY AMORTIZATION FOR 2005 (per forecast)					**57,600**

HAWAIIAN ELECTRIC COMPANY, INC.
EXCESS DEFERRED TAX AMORTIZATION -
OTHER THAN ACCELERATED DEPRECIATION

	Capitalized to Construction	CIAC	Capitalized Interest	TOTAL	TOTAL AMORTIZATION TAX & REG. LIAB.
	BASE				
2006 EXCESS DEFERRED TAXES					
Vintage 1987 - base of amortization	0	(194,068)	(28,378)	(222,446)	
Excess Deferred Tax Rate Differential				0.04699248	
					(10,453)
Pre-1987 vintages - base of amortization	450,913	0	0	450,913	
				0.10324129	
					46,553
TOTAL EXCESS DEFERRED TAX AMORTIZATION FOR 2006					36,100
GROSS-UP FACTOR (1 / (1 - .3890977444))					1.636923
RELATED REGULATORY LIABILITY					59,092
Miscellaneous Difference					(1,492)
TOTAL REGULATORY LIABILITY AMORTIZATION FOR 2006 (per forecast)					**57,600**

COMPUTATION OF RATE DIFFERENTIALS:

EXCESS (for vintage 1987)	
Tax Rate in 1987	0.37593985
Tax Rate in 1993 and forward	0.32894737
EXCESS RATE DIFFERENTIAL	0.04699248
EXCESS (for pre-1987 vintages) *	
Tax Rate Prior to 1987	0.43218866
Tax Rate in 1993 and forward	0.32894737
EXCESS RATE DIFFERENTIAL	0.10324129

* Only FEDERAL effective rates were used, as state tax differential was deemed to be immaterial (6.0459435% - 6.0150376% = .0309059%)

CA-IR-195

Ref: HECO-1706 "Deficit" Deferred Income Tax Balances.

Please provide the calculations supporting the original "deficit" accumulated deferred income tax expense balance and the method of determining the appropriate amortization period for each such "deficit" balance.

HECO Response:

The original deficit accumulated deferred income tax liability was calculated based upon December 31, 1992 balances which generated book/tax temporary differences in years 1988 through 1992. The deferred income tax base was multiplied by 0.9398%, which is the current effective composite tax rate of 38.9097% less the effective composite tax rate in 1988-1992 of 37.9699%.

A schedule, by deferred income tax activities (sub-accounts), was provided in HECO's 1994 test year docket number 7700, rebuttal workpaper HECO-RWP-1207, page 1. See attached copy enclosed as page 3 to this response.

The deficit deferred income tax balances related to accelerated depreciation are being amortized over 33 years, which is an approximation of the average service life of plant

requirement calculation used by the PUC in both Decision and Order No. 13704 in HECO Docket No. 7700 and in Decision and Order No. 14412 in HECO Docket No. 7766.

2/2/94DEF94R.XLS

HECO-RWP-1207
DOCKET NO. 7700
PAGE 1 OF 8

Hawaiian Electric Company, Inc.		1994 TEST YEAR					
Deferred Income Taxes		REBUTTAL					
FEDERAL							
		FEDERAL	EST DEFICIT	EST EXCESS	FEDERAL	Liability	Liab & Exp
LIAB (DR)CR		Actual	DEF'D TAXES	DEF'D TAXES	DEF'D @ 35%	Only Estimate	Estimate
		12-31-92	@ 01-01-93	@ 01-01-93	@ 01-01-93	1993	1993
28310	State ITC	(2,447,874.38)	(71,996.32)		(2,519,870.70)		0.00

CA-IR-196

Ref: HECO-1803 Budgeted 2004/2005 Plant additions -- CIP Application filed in Docket No. 02-0207 pertaining to the Kahe Boiler Control System upgrade.

Within HECO's application in Docket No. 02-0207, HECO stated in relevant part "[d]ecreased maintenance and operational costs, increased reliability and flexibility, higher availability of major equipment through on-line monitoring capability and reduced shutdowns for corrective maintenance as a result of the self-correcting/diagnostic capability of the modernized boiler control system are expected." (Page 4 of HECO's application). Please state specifically, to the extent possible, how anticipated decreases in maintenance and operational costs were considered within the 2005 production operations and maintenance budget and how much the 2005 production operations and maintenance budget was reduced as a result of such anticipated savings.

HECO Response:

Please refer to CA-IR-189. The Kahe Unit 4 boiler control upgrade (Docket No. 02-0207) was rescheduled outside of the 2005 test year to 2006 due to the impact of higher priority outages required in 2005 and the anticipated reduced reserve margin due to higher system loads.

The discussion in CA-IR-189, b, regarding the impacts of boiler control upgrade projects on operation and maintenance cost would apply to the Kahe Unit 4 boiler control upgrade projects when it is installed in 2006.

CA-IR-197

Ref: HECO-1803 Budgeted 2004/2005 Plant additions -- CIP Application filed in Docket No. 04-0109 pertaining to the Waiau 9 Exhaust Duct Replacement project.

At page 5 of its CIP application HECO discusses the impracticality of continued weld repairs of the exhaust duct system. Please state specifically, to the extent possible, how anticipated decreases in weld repair costs were considered within the 2005 production operations and maintenance budget and how much the 2005 production operations and maintenance budget was reduced as a result of such anticipated savings.

HECO Response:

Further weld repair costs were not considered in the 2005 O&M budget because the W9 exhaust

duct had deteriorated to the point where there was not sufficient parent metal intact to make

CA-IR-198

Ref: HECO-1803 Budgeted 2004/2005 Plant additions – CIP Application filed in Docket No. 00-0040 Ward pertaining to the Avenue Air Conditioning Improvement project.

Please provide the following, all of which are in regard to HECO's CIP Application filed in Docket No. 00-0040:

a. Please provide the actual in-service cost and in-service date of Phase I of this project.

b. Please provide the actual energy cost savings in the first year following completion of Phase I. Include copies of all workpapers reflecting the computations made to derive the energy cost savings, the assumptions made for the calculation and any other documentation relied upon to determine the energy cost savings.

c. Please provide the actual maintenance savings in the first year following completion of Phase I. Include copies of all workpapers reflecting the computations made to derive the

HECO Response:

a. As of December 2004, the cost for Phase I is $3,294,152.64. The in-service date for Phase I was January 14, 2003.

b. The energy cost savings resulting from the replacement/improvements to the air conditioning systems serving the Ward I complex constructed under Phase I can only be estimated at this time.

As indicated in Application Exhibit II, page 58, in Docket No. 00-0040, Ward Avenue Air Conditioning Improvements, the original study estimated an energy cost savings of $92,000 for Phase I and II; however, since the study, there have been equipment changes (i.e., water cooled to air cooled chillers, the variable air volume distribution implementation was delayed to Phase II, larger capacity equipment was installed to accommodate future expansion needs of the Ward I complex). As such, the energy cost savings estimated previously needs to be adjusted to reflect the changed conditions, as those changes are significant factors in the overall energy consumption of the system. A "rough" estimate of the energy cost savings after the completion of Phase I is approximately 20% of the previously estimated $92,000, or about $18,000 per year. (There are no workpapers for this "rough" estimate.)

c. Maintenance savings following the completion of Phase I were not necessarily realized because the "new" equipment requires monthly maintenance and upkeep, similar to the "old" equipment. The nature and number of equipment that needs to be maintained are primary factors affecting the level of maintenance expenses, and not necessarily whether the equipment is new or old. The projected maintenance costs included in the Application were based on the equipment assumed within the original project scope. This was compared to

the 1999 maintenance repair and service costs in developing the estimated savings, which are no longer valid due to the project scope changes described in the response to sub-part b.

d. Although the repair savings in the first year following completion of Phase I was anticipated to be minimal, there was an unexpected compressor failure within the chiller package requiring HECO to purchase and expense a replacement compressor since the one-year warranty had expired. The cost of the replacement compressor was $46,496.

e. The in-service date for Phase II of this project is estimated to be October 31, 2005.

f. Energy cost savings following the completion of Phase II are not included in the forecast operating expenses as the Company's energy usage is embedded in the 2005 test year generation estimate, as shown as "Company Use" on HECO-403.

g. Maintenance savings have not been included in the 2005 operating expenses following completion of Phase II. Only when the new equipment installation is completed and maintenance contracts are in place can the amount of maintenance savings be estimated as the maintenance costs are directly related to the specific equipment. Significant savings in maintenance expense are not anticipated. In addition, since the Phase II installation is in late-2005, maintenance savings, if any, would be minimal in 2005.

h. The repair cost savings have not been included in the 2005 operating expenses as the estimated repair costs are based on historical data for the air conditioning repair program for the Company (vs. just for one facility).

CA-IR-199

Ref: HECO-1803 Budgeted 2004/2005 Plant additions -- CIP Application filed in Docket No. 01-0228 pertaining to the Waikiki Rehabilitation Program Project 1.

Within HECO's CIP Application filed in Docket No. 01-0228 HECO describes its capital project proposal to aggressively and comprehensively rehabilitate the underground electric distribution system in the Waikiki area to reduce cable failures. Please provide the following regarding actual/potential cable failures:

a. Actual cable failures in the affected area for the 24 months preceding the project completion, or if not yet completed, latest 24 months available.

b. Actual cost of repairing cable failures in the affected area for the 24 months preceding the project completion, or if not yet completed, actual costs of repairs for the latest 24 months available.

c. Reductions in cable repairs forecasted in the 2005 budget attributable to completion of the rehabilitation project.

HECO Response:

a. See Table below for the number of actual cable failures for 2003 and 2004.

2003	CABLE		CABLE Total	JOINT		JOINT Total	Grand Total
Circuit Name	PEICN	PILC		PEICN	PILC		
ALA MOANA		1	1				1
KALAKAUA					2	2	2

2004	CABLE		CABLE Total	JOINT		JOINT Total	Grand Total
Circuit Name	PEICN	PILC		PEICN	PILC		
ALA MOANA	1		1	1	1	2	3
DERUSSY				1	2	3	3
DIAMOND HEAD	1		1		2	2	3
ENA 2		1	1				1
KANEKAPOLEI	1	1	2	1	1	2	4
KAPAHULU 1		1	1		1	1	2
KAPAHULU 4	5		5				5
KUHIO 2					1	1	1
KUHIO 3				1		1	1
KUHIO 4					1	1	1
MAKALOA	1		1				1
SHERATON 1	1		1		1	1	2
SHERATON 2					3	3	3
WAIKIKI 1					3	3	3
WAIKIKI 3				1		1	1
WAIKIKI 4					1	1	1
WAIKIKI 5				1		1	1
WAIKIKI 6					1	1	1
Grand Total	10	3	13	6	18	24	37

b. The actual total costs for repairing the cable failures in the affected area is $113,000 for 2003 and $332,000 for 2004. The project has not been completed because it is still pending PUC approval.

c. Had the project been completed, it is estimated that the cable failures